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FOR

THE YEAR 1910.

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ON

THE BAROMETRIC DEPRESSIONS

IN

THE YEAR 1910.

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ON THE BAROMETRIC DEPRESSIONS

IN

THE YEAR 1910

INTRODUCTION.

The present report contains the results of investigations on the typhoons and other cyclonic storms that passed over this country and the neighbouring seas during the year 1910.

The material used in preparing this report is the manuscripts of tridaily weather charts of this Observatory, and storm records sent from provincial meteorological stations and naval semaphores. The meteorological logs taken on board His Majesty's ships, merchant marines and foreign vessels have also been used in so far as they were available. The bulletins published by the Philippine Weather Bureau and by the Zikawei Meteorological Observatory and the China coast Meteorological Registers published by the Hongkong Observatory have been consulted. The weather charts published by the Zikawei Observatory were of great aids for us in tracing the birth places of many continental cyclones.

The present volume consists of two parts. The first part contains a general review of the barometric depressions in each month, and the second part the detailed descriptions of more important cyclonic storms. In the general review of depressions their origins, motions, and lowest barometric readings are concisely stated. But in the cases in which the depressions caused unusual phenomena such as severe storms, heavy rainfalls, strong gales, etc., more lengthy descriptions are given.

In the description of more important cyclonic storms, brief statements of their appearances, passages, and the state of weather are given. Damage caused by storms and inundation attending the cyclones are stated. The tracks of all the depressions described in the text are exhibited on the charts at the end of the volume, and those of severe typhoons and cyclones are given in thick lines. Each of the small circles in the track indicates the position of the cyclonic centre at the hour specified by the letter printed near it. The figures near the small circle denote the date, and the alphabet the hour. Thus "a" stands for 6 am; "b" for 2 pm. and "c" for 10 pm. The figures within the circle denote the depth of the centre, but for the sake of shortness the first figure in the barometric reading is omitted.

I. GENERAL REVIEW OF THE BAROMETRIC DEPRESSIONS.

January.—During the month of January, twenty two depressions were traced on our charts. Most of them were continental depressions, which came from N China and the Yangtse Valley. Among them the two cyclones which visited Hokkaido on the 30th and the 31st were most noteworthy, and caused severe snowstorms in N Japan.

1. *Continental Depression (Jan. 3-5) from the Yangtse Valley.*—Appeared in the upper Yangtse Valley on the 3rd, and made its way towards the ENE. On the morning of the 5th, the depression crossed the southern part of Kiushiu, and then travelled along the southern coast of Japan. Finally it went off towards the Pacific Ocean. L. B. 758 mm.

2. *Continental Depression (Jan. 4-6) from the Yangtse Valley.*—Came from the Yangtse Valley on the 4th, and appeared in the Eastern Sea, whence it moved northeastwards. On the morning of the 5th, the depression passed through the Korea Strait, and then travelled along the coast of the Japan Sea. Crossing N E Japan, it passed away into the Pacific on the 6th. L. B. 758 mm.

3. *Continental Depression (Jan. 5-7) from N Manchuria.*—Appeared in N Manchuria on the 5th, and moving southeastwards entered the Japan Sea. Then, recurving towards the N E, the cyclone visited S Saghalien on the 7th. L. B. 748 mm.

4. *Continental Depression (Jan. 7-9) from the Yangtse Valley.*—Appeared in the upper Yangtse Valley on the morning of the 7th, and made its way towards the northeast. On the afternoon of the 8th, it passed through the Korean Strait, thus entering the Japan Sea. On the 9th, the depression crossed the eastern part of Hokkaido and finally entered the sea of Okhotsk. L. B. 747 mm.

5. *Continental Depression (Jan. 7-9) from the Yangtse Valley.*—Developed on the afternoon of the 7th in the upper Yangtse Valley, whence it moved northeastwards into the Yellow Sea. On the afternoon of the 8th, it passed over the southern part of Korea, and entered the Japan Sea. On the afternoon of the 9th, the depression traversed S Saghalien, and then entered the Okhotsk. This depression caused stormy weather over N Japan. L. B. 747 mm.

6. *Depression (Jan. 8-9) from the Yaeyama Group.*—Appeared near the Yaeyama group on the morning of the 8th. Taking its course northeastwards, the

depression travelled along the southern coast of Japan, and finally entered the Pacific. L. B. 754 mm.

7. *Continental Depression (Jan. 9-11) from the Yangtse Valley.*—Appeared in the Yangtse Valley on the morning of the 9th, and made its way towards the east. On the morning of the 11th, it approached the southern coast of Kiushiu and then travelled along the Pacific coast. Finally it went off towards the Pacific ocean. L. B. 756 mm.

8. *Depression (Jan. 10-11) from N Formosa.*—Appeared in the neighbouring sea of N Formosa on the morning of the 10th. It moved northeastwards, and travelled over the Eastern Sea and along the southern coast. On the afternoon of the 11th, it passed away into the Pacific. L. B. 758 mm.

9. *Continental Depression (Jan. 10-12) from the Yangtse Valley.*—Appeared in the Yangtse Valley on the 10th, and moved in an easterly direction. On the afternoon of the 11th it came near the southern coast of Kiushiu and then travelled along the Pacific coast. On the morning of the 12th, the depression went off towards the Pacific. L. B. 756 mm.

10. *Depression (Jan. 13-15) from the vicinity of the Yaeyama Group.*—Appeared near the Yaeyama group on the afternoon of the 13th. Moving northeastwards the depression travelled along the Pacific coast on the 14th, and finally went away into the Pacific ocean. L. B. 756 mm.

11. *Continental Depression (Jan. 14-17) from N China.*—Came from N China, and on the morning of the 14th it appeared near the peninsula of Liaotung. Moving towards the east, the depression traversed the central part of Korea, and then travelled over the Japan Sea. On the afternoon of the 17th, it crossed the southern part of Hokkaido, and finally entered the Pacific. L. B. 750. mm.

12. *Depression (Jan. 14-17) of the Pacific coast.*—Coming from the Eastern Sea, this depression appeared off the south-western coast of Kiushiu on the afternoon of the 14th. Making its way northeastwards, it travelled along the Pacific coast, and on the 16th it approached the eastern coast of Japan. On the afternoon of the 17th, it went away towards the S Kuriles. L. B. 749 mm.

13. *Depression (Jan. 17-19) of the Pacific coast.*—Appeared off the southern coast of Japan on the afternoon of the 17th, and travelled northeastwards. On the 18th, it approached the Boso Peninsula and finally went away into the Pacific. L. B. 752 mm.

14. *Continental Depression (Jan. 18-19) from N Korea.*—Coming from N Korea,

it appeared in the central part of the Japan Sea on the morning of the 18th. Moving towards the northeast, the depression crossed NE Japan, and on the 19th it visited the S Kuriles. This depression caused a snowstorm in Hokkaido. L. B. 748 mm.

15. *Continental Depression (Jan. 19-22) from the Yangtse Valley.*—Appeared in the Yangtse Valley on the morning of the 19th, and on the afternoon of the 20th, it came to the Yellow Sea, whence it travelled northeastwards, crossing S Korea and entering the Japan Sea. On the 21st it passed over NE Japan, and finally went away into the Pacific ocean. L. B. 754 mm.

16. *Continental Depression (Jan. 19-22) from the Yangtse Valley.*—Appeared in the Yangtse Valley on the afternoon of the 19th, and made its way towards the northeast. On the 21st, it passed over N Kiushiu and the extreme south of Shikoku, and then travelled along the southern coast of Japan. Crossing the peninsula of Boso, the depression went off towards the Pacific on the 22nd. L. B. 754 mm.

17. *Depression (Jan. 25-26) of the Pacific coast.*—Appeared off the south of the Riukiu group on the morning of the 25th. Moving northeastwards, the depression approached the Boso Peninsula on the morning of the 26th. Finally it disappeared into the Pacific. L. B. 758 mm.

18. *Continental Depression (Jan. 26-28) from N China.*—Appeared in N China on the 26th, and moving northeastwards, passed over the Amour region. On the morning of the 28th, the depression was found in the northern part of the Japan Sea, and then crossing the southern extremity of Saghalien, it entered the Okhotsk. L. B. 754 mm.

19. *Continental Depression (Jan. 26-28) from N Manchuria.*—Appeared in N Manchuria on the 26th and made its way towards the southeast. On the afternoon of the 27th, it was found in the central part of the Japan Sea. Then, changing its course to the northeast, the depression passed over Hokkaido, and on the afternoon of the 28th, it went away towards the S Kuriles. L. B. 756 mm.

20 *Continental Depression (Jan. 27-31) from the Yangtse Valley.*—Appeared in the upper Yangtse Valley on the 27th and made its way towards the east On the morning of the 29th, it approached the southwestern coast of Kiushiu and then travelled along the Pacific coast. On the morning of the 30th, it was located off the Boso Peninsula, whence it moved northeastwards. On the night of the same day, it crossed the eastern part of Hokkaido and entered the sea of Okhotsk. This depression caused stormy weather over N Japan. L. B. 727 mm.

21. *Continental Depression (Jan. 28-31) from N Manchuria.*—Appeared in N Manchuria on the 28th, and travelled southeastwards. On the morning of the 30th, it came to the central part of the Japan Sea, whence it changed its course towards the NNE. On the morning of the 31st, the depression passed through the Soya Strait, and finally entered the sea of Okhotsk. This depression caused a severe snowstorm over N Japan. L. B. 728 mm.

22. *Continental Depression (Jan. 28-30) from the Yangtse Valley.*—Appeared in the Yangtse Valley on the 28th and made its way towards the east. On the afternoon of the 29th, it approached the southern coast of Kiushiu, and then travelled along the Pacific coast. On the afternoon of the 30th, it crossed the peninsula of Boso and passed away into the Pacific.

L. B. 750 mm.

February.—The principal barometric depressions which passed over this country were eleven in number. Some of them were continental depressions, while the other were cyclones from Formosa and Riukiu.

23. *Continental Depression (Feb. 6-8) from North China.*—Appeared on the 6th in N China, advanced towards the ENE, and passed into the sea of Okhotsk on the 8th. L. B. 755 mm.

24. *Depression (Feb. 8-10) from the Eastern Sea.*—Originated in the Eastern sea on the 8th, moved along the Pacific coast and passed into the S Kuriles on the 10th, causing northerly gales in Hokkaido. L. B. 732 mm.

25. *Continental Depression (Feb. 8-10) from N China.*—Appeared on the 8th in N China, moved towards the SE. and arrived on the night of the same day at the Japan Sea. Thence it recurved toward the ENE and entered the sea of Okhotsk, traversing S. Hokkaido. L. B. 734 mm.

26. *Depression (Feb. 15-18) from Formosa.*—Appeared on the 15th in the sea to the east of Formosa, moved towards the northeast along the Riukiu and the Pacific coast. On the 17th it moved more northwards and arrived on the 18th at the Kuriles. L. B. 742 mm.

27. *Continental Depression (Feb. 15-17) from the Yangtse Valley.*—Developed in the lower Yangtse Valley on the 15th, moved eastwards over the Eastern Sea, and crossed on the 16th over southern Kiushiu. On the 17th it travelled along the Pacific coast. L. B. 748 mm.

28. *Depression (Feb. 19-20) from Ishigakijima.*—Appeared on the 19th near the islands of Yaeyama, and moved towards the ENE, crossing over the Okinawa Islands. On the 20th the depression passed to the north of the Bonins. L. B. 758 mm.

29. *Depression (Feb 22-23) from the Yaeyama Islands.*—Appeared on the 22nd in the sea to the south of Yaeyama group and made its way towards the east. On the 23rd the cyclone passed over the Bonins. L. B 755 mm.

30. *Continental Depression (Feb. 24-26) from the upper Yangtse Valley.*—Appeared in the upper Yangtse Valley on the 24th, moved along the river and entered on the 28th the Eastern sea. The cyclone travelled along the western coast of this country, and passed away into the Pacific, traversing NE Japan on the 26th. L. B. 748 mm.

31. *Secondary Depression (Feb. 26).*—Developed on the 26th in the Inland Sea and moved eastwards over SE Japan, and passed away into the Pacific. L. B. 749 mm.

32. *Depression (Feb. 26-28) from N Japan Sea.*—Developed near the north-western coast of Japan on the 26th, moved towards NE and travelled over E Hokkaido. On the 27th the depression united with a large cyclone from N China. L. B. 735 mm.

33. *Continental Depression (Feb. 25-28) from N China.*—Came from N China on the 25th, and travelled over N Korea and along the Japan Sea. On the 27th the depression passed over Hokkaido and entered the Pacific. L. B. 735 mm.

March—34. *Depression (Mar. 2-3) from the Riukiu.*—Appeared on the 2nd in the Riukiu, and moved towards the ENE. On the 3rd the cyclone entered the Pacific and passed near the island of Hachijo. L. B. 750 mm.

35. *The Boso Depression (Mar. 12).*—The origin of this remarkable depression is not yet accurately known. But on the weather chart of the 10 pm on the 11th, a small depression was located in the prefectures of Yamanashi and Shizuoka. The depression was found lying near Odawara on the 2am on the 12th. This depression may probably be identified with the Boso depression of the same date. The latter depression caused severe snow-storms in SE Japan, and on the Pacific to the east of the Boso Peninsula, and resulted in a heavy damage in life and property. Some hundreds fishing boats were overturned and about eight hundred lives were lost in the sea. L. B. 740 mm.

36. *Continental Depression (Mar. 13-16) from Mongolia.*—Appeared on the 13th in Eastern Mongolia, moved towards the S E and arrived at the neighbourhood of Port Arthur on the 14th. Recurving towards the NE the cyclone travelled along the S coast of Siberia and traversed over N Hokkaido and the S Kuriles on the 15th. L. B. 730 mm.

37. *Continental Depression (Mar. 14-16) from N Manchuria.*—Came from N Manchuria on the 14th, moved towards the SE and passed over the neighbourhood of Vladivostok on the 15th. Recurving towards the NE the depression went away into the sea of Okhotsk. L. B. 730 mm.

38. *Continental Depression (Mar. 20-24) from the Yangtse Valley.*—Came from the upper Yangtse Valley, and appeared near Shasi on the 20th. Moving along the river, the depression entered on the 22nd the Eastern sea. It travelled over the sea and along the Pacific to the south of Japan on the 23rd, and went away into the Pacific. L. B. 750 mm.

39. *Continental Depression (Mar. 21-23) from the Yangtse Valley.*—Developed near the mouth of the river on the 21st, moved towards the east over the Eastern Sea and along the Pacific coast on the 22nd and 23rd. L. B. 750 mm.

40. *Continental Depression (Mar. 26-27) from the upper Yangtse Valley.*—Came from the Sezuan province, and appeared near Ichang on the 26th. Moving toward the northeast the depression crossed over the Yellow Sea, Korea and Japan Sea, and visited northern Hokkaido on the 27th. On the same day the cyclonic centre passed away into the sea of Okhotsk. A severe rainstorm occurred in Northern Japan and the Japan Sea during the visitation of the cyclone. L. B. 740 mm.

41. *Continental Depression (Mar. 29-30) from the Baikal district.*—Approached Northern Manchuria on the 29th. After moving towards the SE the cyclone arrived at N Korea, where it recurved towards the ENE On the 30th the cyclone travelled over Hokkaido and passed away into the Pacific, causing a severe rainstorm. L. B. 740 mm.

April.—42. *Depression (April. 1-2) from the Eastern Sea.*—Appeared on the 1st in the Eastern Sea, travelled along the Pacific coast from S Kiushiu to the Boso Peninsula. L. B. 758 mm.

43. *Continental Depression (April 2-6) from N China.*—Appeared on the 2nd in N China, moved eastwards and crossed over North Korea on the 3rd. After travelling over the Japan Sea, the cyclone passed through the Tsugaru Strait on the 4th, and passed away into the Pacific. L. B. 755 mm.

44. *Continental Depression (April 7-10) from the Yangtse Valley.*—Appeared on the 7th between Shanghai and Hangchow, moved towards the east and crossed over the Eastern Sea on the 8th. On the 9th the cyclone travelled over the Pacific to the south of Japan. L. B. 755 mm.

45. *Depression (April 10-12) from Formosa.*—Appeared on the 10th in the sea between Formosa and the Yaeyama Islands, moved towards the NE and travelled along the Pacific coast. On the 12th the cylone went away from our area. L. B. 750 mm.

46. *Continental Depression (April 11-14) from North China.*—Appeared on the 11th in North China, moved southeastwards, and arrived at the Kwantung Peninsula on the 12th. Recurving northeastwards the cyclone travelled along the eastern coast of Siberia on the 13th. On the 14th the cyclone crossed over S Saghalien. L. B. 745 mm.

47. *Continental Depression (April 17-19) from N China.*—Appeared on the 17th in the neighbourhood of Tientsin, moved northeastwards and travelled over N Korea and along the Siberian coast on the 18th. On the 19th, the cyclone passed over Central Saghalien. L. B. 750 mm.

48. *Continental Depression (April 23-25) from the Yangtse Valley.*—Developed in the upper Valley of the Yangtse and appeared on the 23rd in the neighbourhood of Lake Tonting. Moving northeastwards, the depression crossed over the Yellow Sea, Korea and Japan sea on the 24th, and passed into the sea of Okhotsk, crossing S Saghalien on the 25th. L. B. 744 mm.

49. *Continental Depression (April 23-26) from the Yangtse Valley.*—Developed in the neighbourhood of Lake Poyang on the 23rd, moved northeastwards, and crossed over the Eastern sea, Korea and Japan sea from the 24th to the 25th. After traversing NE Japan, the depression passed into the Pacific on the 25th, and went away into the Kuriles. L. B. 743 mm.

50. *Continental Depression (April 27-29) from the Yangtse Valley.*—Appeared on the 27th in the neighbourhood of Lake Tonting, moved towards the NE, crossed over the Eastern Sea, and travelled along the coast of the Japan Sea. On the 29th the cyclone entered the Pacific. L. B. 750 mm.

May.—51. *Continental Depression (May 1-2) from the lower Yangtse Valley.*—Appeared on the morning of the 1st near Shanghai, moved eastwards over the Eastern Sea and along the southern coast of Japan on the 2nd. L. B. 750 mm.

52. *Typhoon (May 7-11) from the Caroline Islands.*- Appeared on the 2nd in the neighbourhood of the Carolines, moved northwestwards and approached the Philippines on the 7th. Recurving towards the northeast in the Balintang Strait the typhoon advanced along the Riukiu Islands and travelled over SE Japan on the 11th, causing a heavy rainstorm on the Pacific coast, which resulted in a great deal of damage. L. B. 730 mm.

53. *Depression (May 12-14) from the Eastern Sea.*—Appeared on the 12th in the Eastern Sea, travelled northeastwards over the sea and thence along the Pacific coast from the 13th to the 14th. On the night of the 14th, the depression passed away into the Pacific. L. B. 750 mm.

54. *Continental Depression (May 13-14) from the neighbourhood of Shantung.*—First noticed on the 13th in the neighbourhood of the peninsula. Moving towards the ENE the cyclone travelled over the Japan Sea and crossed over NE Japan on the 14th. L. B. 750 mm.

55. *Continental Depression (May 13-15) from Mongolia.*—Appeared on the 13th in Manchuria, moved towards the ESE and came to the Japan Sea on the 14th. Thence it recurved towards the ENE and passed on the 15th into the Pacific, crossing over N Hokkaido. A rainstorm prevailed in Hokkaido during its visitation. L. B. 748 mm.

56. *Secondary Depression (May 13-14) from the S Japan Sea.*—Developed on the 13th in the S Japan Sea, moved towards the northeast and went away into the Pacific, passing through the Tsugaru Strait on the 14th. L. B. 750 mm.

57. *Typhoon (May 16-19) from Yap Island.*—Appeared on the 15th in the neighbouring sea of Yap Island, moved towards the N W and approached the Central Riukiu on the 17th. Recurving towards the NE, the typhoon travelled over the Pacific to the south of Japan. L. B. 745 mm.

58. *Continental Depression (May 16-19) from Mongolia.*—Appeared on the 16th in N Manchuria, moved towards the ESE and approached Vladivostok on the 18th. Recurving towards the E., the depression crossed over Hokkaido and entered the Pacific on the 19th. L. B. 747 mm.

59. *Depression (May 20-22) from the sea to the south of Riukiu Islands.*—Appeared on the 20th in the sea to the south of the Riukius, moved northeastwards and passed between Hachijo-Island and the Bonins on the 22nd. L. B. 755 mm.

60. *Typhoon (May 26-30) from the neighbourhood of the Philippines.*—Appeared near the east coast of Luzon on the 26th, recurved towards the northeast in the Balintang Strait, and travelled along the Riukiu Islands. On the 28th the typhoon passed near Miyakejima Island, causing a severe rainstorm in SE Japan. L. B. 750 mm.

61. *Continental Depression (May 29-June 2.) from the Yangtse Valley.*—Developed on the 29th in the upper Yangtse Valley, and moved towards

the northeast. On June 2nd the depression was found in the Liaotung Peninsula. Inclining further northwards it travelled over Manchuria.

L. B. 746 mm.

June.—62. *Continental Depression (June 1-2) from the lower Yangtse Valley.*—Appeared on the 1st in the Yellow Sea, moved towards the ENE and entered the Japan Sea on the night of the same day. On the 2nd the cyclone was filled up to the west of the Tsugaru Straits. L. B. 750 mm.

63. *Continental Depression (June 2-5) from the upper Yangtse Valley.* - Appeared on the 2nd in the upper Yangtse Valley, moved towards the northeast and travelled over Southern Manchuria from the 3rd to the 5th. L. B. 739 mm.

64. *Depression (June 15-17) from S Korea.*—Appeared on the 15th in S Korea, moved towards the NE and travelled along the west and northwestern coasts from the 15th to the 17th. It was filled up on the 17th in the neighbourhood of Akita. L. B. 752 mm.

65. *Continental Cyclone (June 18-22) from Siberia.*—Appeared on the 18th in Mongoria, and passed over N Manchuria on the 19th. Moving towards the ENE, the cyclone travelled over E Siberia, and on the 21st to S Saghalien. L. B. 740 mm.

66. *Continental Cyclone (June 24-27) from Schwau.*—Appeared on the 24th between Tibet and Schwau, moved northeastwards, and crossed over the Yellow Sea and N Korea on the 25th. It passed near Vladivostok on the 26th and went away into the Tartary Straits on the 27th. L. B. 743 mm.

July.—67. *Continental Cyclone (July 1-4) from the lower Yangtse Valley.*—Appeared on the 1st near Shanghai, moved northeastwards, and crossed over S Korea and S Japan Sea. On the 4th the cyclonic centre traversed NE Japan and passed away into the Pacific. The cyclone degenerated into a mere low area as it passed over NE Japan. L. B. 752 mm.

68. *Depression (July 4-5) from Formosa.*—Appeared on the morning of the 4th in North Formosa, made its way towards the ENE and crossed over Northern Riukiu. After travelling far off the southern coast of Japan, the depression passed between Hachijo Island and the Bonins. L. B. 755 mm.

69. *Continental Cyclone (July 8-10) from the lower Yangtse Valley.*—Appeared on the 8th between Shanghai and Nanking, moved towards the ENE, and crossed over the Yellow Sea and S Korea on the 9th. On the 10th the Cyclone filled up near Sado Island. L. B. 745 mm.

70. *Continental Cyclone (July 10-12) from Schwau.*—Appeared on the 10th in

the province of Schwau, moved eastwards and crossed over the Yellow Sea and S Korea on the 11th. The depression filled up near the Noto Peninsula on the 12th. L. B. 747 mm.

71. *Continental Depression (July 13-17) from Schwau.*—Came from Schwau on the 13th, and arrived at the neighbourhood of Lake Tonting on the 14th. Moving towards the northeast, the depression crossed the Yellow Sea and S Korea. On the 17th it filled up on the northwestern coast of NE Japan. L. B. 748 mm.

72. *Typhoon (July 15-22) from the Pacific.*—Appeared on the 15th to the south of the Riukiu Islands, moved northwestwards, and crossed over N Formosa on the 17th. Landing in the neighbourhood of Foochow, the typhoon entered China. On the 18th it recurved towards the northeast, and crossed over the Yellow Sea and N. Korea on the 19th. Travelling along the coast of Siberia, the typhoon-centre entered the northern part of the Japan sea on the 21st. On the 22nd it visited S Saghalien. The typhoon caused a heavy rainstorm in Formosa. L. B. 740 mm.

August.—73. *Typhoon (July 25-Aug. 3) from the Mariana Islands.*—Appeared on the 25th between the Bonins and the Mariana Islands, moved towards the northwest and arrived on the 27th at the east of Amami Oshima Island, where it recurved towards the west. After crossing over the Eastern Sea, the typhoon landed in the neighbourhood of Wenchow, and arrived on the 31st at the neighbourhood of Wafu, where it recurved northwards. The typhoon filled up on August 3rd in N China. The typhoon caused a severe rainstorm near its track. L. B. 740 mms

74. *Typhoon (Aug. 7-11) from the Philippines.*—The origin of this typhoon i. not known. It appeared on the 6th in the Pacific to the east of the Archipelago and approached on the 7th to the southeastern coast of Formosa. Moving towards the north, it crossed the sea between Formosa and Yaeyama Islands, and thence recurved towards the northeast. On the 8th it crossed the central Riukiu Islands, and entered the Pacific. It was found on the 10th to the south of the Kii Peninsula. The typhoon centre passed between Hachijo Island and the mainland and went away into the Pacific. The typhoon was attended by a heavy rainfall in Southeastern Japan. In consequence, many rivers rose rapidly and inundated most of the low lands which resulted in a great lose in life and property. L. B. 743 mm.

75. *Continental Depression (Aug. 7-10) from Schwau.*—Appeared on the 7th in Schwau, moved southeastward and arrived on the 8th at the neighbourhood

of Lake Poyang where it recurved eastwards. After traversing the Eastern Sea the cyclone entered on the 10th the Pacific and disappeared from our area L. B. 748 mm.

76. *Typhoon* (*Aug. 10-14*) *from S Riukiu.*—Appeared on the 10th to the south of S Riukiu, moved towards the NE, and travelled over the Eastern Sea and the Pacific from the 11th to the 13th. On the 13th, it landed in the neighbourhood of Numazu and travelled northeastwards, and filled up in NE Japan. During the visitation of this typhoon a heavy rain fell in SE Japan L. B. 740 mm.

77. *Depression* (*Aug. 20-21*) *from the Pacific.*—First noticed on the morning of the 20th to the southwest of Hachijo Island. Moving towards the NNE., the depression passed to the east of Cape Enubo on the 21st and disappeared from our area. L. B. 750 mm.

78. *Continental Cyclone* (*Aug. 20-23*) *from the Yangtse Valley.*—Appeared on the 20th in the Mean Yangtse Valley, moved towards the NE., and travelled over the Gulf of Liaotung and Manchuria on the 21st and 22nd and filled up in E Siberia. This depression caused a heavy rainstorm in Manchuria. L. B. 738 mm.

79. *Typhoon* (*Aug. 21-31*) *which crossed S Formosa.*—Appeared to the southeast of Formosa on the 28th, moved towards the WNW., and crossed over S Formosa on the 29th, causing a heavy rainstorm. At Koshun the mean wind velocity for the 15 m. (0^h 15^m to 0^h 30^m on the 29th) was 56.8 m.p.s. The total rainfall for the day was 433.8 mm, the fall for one hour (1-2 PM.) being 112.2 mm. After travelling over the China Sea the typhoon passed the neighbourhood of Hongkong on the 31st. L. B. 733 mm.

80. *Typhoon* (*Aug. 30—Sept. 6*).—Appeared to the southeast of the Okinawa Islands on the 30th, moved northwestwards, gradually inclining westwards. On Sept. 1st, the typhoon passed to the north of the Miyakoshima group and approached N Formosa. Thence the typhoon centre advanced southwestwards along the west side of the Formosa Channel and visited the neighbourhood of Hongkong on the 3rd. On the morning of the 2nd S.S Yawatamaru met this terrific typhoon and narrowly escaped from the destruction. L. B. 705 mm.

September.—81. *Typhoon* (*3-9*) *from the eastern sea of Luzon.*—First noticed in the sea to the east of Luzon on the 2nd. Moving towards the northwest, the typhoon approached the Okinawa Islands on the 6th. Thence it recurved towards the northeast and visited Kiushiu. After travelling over Kiushiu,

Shikoku and Kii Peninsula, the cyclonic centre passed into the Pacific off the Southeastern coast of Japan. L. B. 743. mm.

82. *Continental Depression* (*Sept. 10-11*) *from N China.*—Appeared near Shanhaikwan on the morning of the 10th, moved eastwards and recurved towards the northeast in the neighbourhood of Vladivostok on the night of the same day. The cyclone visited the extreme north of Hokkaido on the 11th, causing a severe rainstorm there. L. B. 745 mm.

83. *Continental Depression* (*Sept. 11-14*) *from the Yangtse Valley.*—Developed in the upper Yangtse Valley on the 11th, moved along the river and entered the Eastern Sea on the 12th. On the 13th the cyclone crossed over the Korean Strait, Inland Sea and Kii Peninsula. It passed near Hachijo Island on the morning of the 14th. L. B 752 mm.

84. *Continental Depression* (*Sept. 18-20*) *from the Yangtse Valley.*—Appeared in the upper Yangtse Valley on the 18th, moved towards the ENE along the river, crossed over the Yellow Sea and Korean Strait. On the 20th the cyclone travelled over Japan proper from the western to the eastern coast and entered the Pacific. L. B. 749 mm.

85. *Continental Cyclone* (*Sept. 22-25*) *from N China.*—Came from N China on the 22nd, moved towards the east up to Vladivostok. Thence it travelled along the Siberian coast on the 24th and passed away into the Okhotsk Sea, crossing Central Saghalien on the 25th. L. B. 750 mm.

86. *Typhoon* (*Sept. 26-30*) *from the Pacific to the south of the Riukiu.*—Appeared to the south of the Okinawa Islands on the 26th, moved towards the west and passed over the Bashee channel. On the 29th the typhoon travelled over the China Sea and passed to the south of Hongkong. A heavy rainstorm prevailed in Formosa. L. B. 749 mm.

October.—87. *Continental Depression* (*Oct. 7-9*) *from Mongolia.*—Developed in Mongolia on the 7th, moved at first towards the SE. It recurved towards the NE in N Korea on the 8th. After travelling along the Siberian coast and crossing over S Saghalien the cyclone went away into the Okhotsk on the 9th. L. B. 748 mm.

88. *Typhoon* (*Oct. 7-15*) *from the Pacific.*—Appeared in the Pacific to the east of the Philippines in Oct. 7th. Moved towards the NNW., and approached the Riukiu on the 16th. It recurved towards the ENE. near Okinawa Island, and made its way over the Pacific. On the 15th the typhoon passed near Hachijo Island. A heavy rainstorm occurred in the Riukiu. The barometer

fell to 730.1 mm at Naha. The total rainfall from the 9th to the 12th was 609 mm at Naha and 384 mm at Nase. L. B. 730 mm.

89. *Continental Depression* (*Oct. 16-21*) *from the upper Yangtse Valley*— Appeared in the upper Yangtse Valley on the 16th, made its way towards the ESE, and entered the Eastern Sea on the 20th. L. B. 761 mm.

90. *Continental Depression* (*Oct. 31-Nov. 3*) *from the upper Yangtse Valley.*— Came from the upper valley of the Yangtse, moved along the river and entered the Eastern Sea on Nov. 1st. Thence, the cyclone travelled along the western coast and crossed over Central Japan on the 2nd. On the 3rd it passed away into the Paicfic. L. B. 750 mm.

November.—91. *Continental Depression* (*Nov. 1-3*) *from the N Manchuria.*— Appeared near Changchun on the first, and moved southeastwards. On the 2nd the cyclone arrived at the neighbourhood of Vladivostok where it recurved northeastwards. On the 3rd the cyclonic centre passed over S Saghalien and went away into the Sea of Okhotsk, causiug northwesterly gales over this country, especially in its northern provinces. L. B. 745 mm.

92. *Barometric Depression* (*Nov. 8-10*) *from Formosa.*—Appeared off the southeastern coast of Formosa on the 8th, moved northward and recurved towards the northeast. Travelling along the north side of the Riukiu Islands, the depression visited S Kiushiu, Shikoku and Tokaido on the 10th, causing northwesterly gales near its track. L. B. 745 mm.

93 *Continental Depression* (*Nov. 8-12*) *from the Lower Yangtse Valley.*— First noticed between Shanghai and Kinkiang on the 8th. Moving northeastwards the cyclone crossed over Central Korea and entered the Japan Sea on the 11th. It crossed NE Japan on the 12th and went away into the Pacific, causing westerly gales. L. B. 745 mm.

94. *Continental Cyclone* (*Nov. 14-16*) *from the Yangtse Valley.*—Appeared in the upper Yangtse Valley on the 14th, moved towards the ENE. and then inclined towards the NE. On the 15th it crossed over S Korea and entered the Japan Sea. After traversing NE Japan the cyclone passed away into the Pacific off our eastern coast. L. B. 754 mm.

95. *Depression* (*Nov. 15-17*) *from the Yellow Sea.*—Developed in the Yellow Sea on the morning of the 15th. It moved towards the northeast and crossed over Korea and the Japan Sea on the 16th. After passing through the Soya Strait, the cyclone entered the sea of Okhotsk, causing heavy gales from west over the whole of Japan. L. B. 735 mm.

96. *Continental Depression (Nov. 22-24) from the Baikal district.*—Appeared in the neighbourhood of Lake Baikal on the 22nd, moved towards the east and passed over Central Saghalien on the night of the 23rd. L. B. 748 mm.

97. *Continental Depression (Nov. 27-29) from the Yangtse Valley.*—Appeared in the upper valley of the Yangtse-kiang on the 27th, moved towards the ESE and traversed the Eastern Sea and the N Riukiu on the 28th. L. B. 758 mm.

98. *Continental Depression (Nov. 29-Dec. 1) from the Lower Yangtse Valley.*—Developed in the lower Yangtse Valley on the morning of the 29th, moved towards the east and travelled along the southern coast from S Kiushiu to the Boso Peninsula on the 30th. L. B. 754 mm.

December.—99. *Continental Depression (Dec. 1-2) from N Korea.*—First noticed near Wonsan on the 1st, moved northeastwards and crossed over S Saghalien on the 2nd, causing heavy gales in N Japan. L. B. 738 mm.

100. *Continental Depression (Dec. 7-8) from N China.*—Appeared in N China on the 7th, moved towards the SE and entered the Japan Sea. Thence, it recurved eastwards and crossed over NE Japan on the 8th. L. B. 755 mm.

101. *Depression (Dec. 13-14) from Formosa.*—Appeared near Formosa on the 13th, moved towards the northeast and passed over NE Riukiu on the 14th. After travelling along the Pacific coast, the depression passed near Hachijo Island on the night of the 14th. L. B. 760 mm.

102. *Continental Depression (Dec. 15-17) from Liaotung.*—Developed in Liaotung on the morning of the 15th, moved southeastwards and crossed over Central Korea on the same day. Thence it recurved towards the east. After travelling over the Japan Sea and NE Japan the cyclone entered the Pacific on the 17th. A snowstorm occurred in NE Japan during the visitation of the cyclonic centre. L. B. 750 mm.

103. *Continental Depression (Dec. 17-20) from Schwau.*—Appeared in Schwau on the 17th, moved towards the ESE over the Yangtze valley and Eastern Sea. On the 20th the cyclonic centre entered the Pacific, passing near Yakushima Island. L. B. 760 mm.

104. *Continental Depression (Dec. 26-28) from Siberia.*—Came from Siberia and appeared in N China on the 26th. Travelling over the Gulf of Pechili and N Korea the cyclone entered the Japan Sea on the 27th. The cyclone developed very rapidly on its way towards the east and visited Hokkaido causing a snowstorm of unusual intensity. L. B 744 mm.

105. *Continental Depression (Dec. 29-31) from Schwau.*—Developed in the upper valley of the Yangtse on the 29th, moved towards the ENE and passed over the Korean Strait on the 30th. Moving along the coast of the Japan Sea, the depression crossed over NE Japan on the 31st and went away into the Pacific. A snowstorm prevailed in N Japan during the visitation of the cyclonic centre. L. B. 750 mm.

106. *Continental Depression (Dec. 29-31) from the lower Yangtse Valley.*—Developed in the lower Yangtse Valley on the 29th, moved towards the ENE and travelled over the Eastern Sea, the Inland Sea of Japan and the southeastern coast of Japan proper. L. B. 748 mm.

II. REMARKABLE TYPHOONS.

1. The Typhoon of May 7 to 11th.

This typhoon seems to have developed in the neighbourhood of the Caroline Islands on the 2nd of May. On the 3rd it passed between the Island of Yap and the Pelew Islands towards the northwest. The meteorological observations made at Yap shows clearly the passage of the typhoon:—

Meteorological Observation made at Yap.

Date	Hour	Barometer	Wind direct.	Wind force
May 2	8 p.m.	754.42	SE ly E	5
„ „	m.n.	754.35	SE	6
„ 3	4 a.m.	752.47	SE	6
„ 6	6 a.m.	753.57	SE	6
„ „	10 a.m.	754.65	SSE	5

Heavy rain fell in Yap during the visitation of this typhoon. The total daily amount on May 2nd was 223.5mm.

On the 7th of May the typhoon approached Northern Luzon. On the 8th it recurved towards the northeast in the east of the Balingtan channel. About 2pm of the 9th the cyclonic centre passed over the Miyakoshima group, and thence advanced along the north side of the Riukiu group. On the 10th it was found off the South coast of Japan. Crossing the Kii peninsula and traversing SE Japan on the 11th the typhoon passed into the Pacific to the east of NE Japan on the night of the same day. The mean velocity of this typhoon was 28.7km. per hour in average. It was rather slow in the lower latitude, the speed being below 10km. per hour. But it became very rapid in its motion, and the speed became above 40km per hour when it was about to leave this country.

The following table gives the particulars about the progressive motion of this cyclonic storm:—

The Direction and Speed of the Typhoon.

Date	Time	Position of Centre		Direct.	Speed.
7th	2 p.m.	124°00′ E	17°20′ N	NW	10.3 km.p.h.
„	10 p.m.	123°40′	18°00′	NNW	16.5
8th	6 a.m.	123°25′	19°10′	N	17.5
„	2 p.m.	123°20′	20°25′	N	22.7
„	10 p.m.	123°35′	22°00′	NNE	23.7
9th	6 a.m.	124°25′	23°30′	NE	21.6
„	2 p.m.	125°25′	24°45′	NE	33.0
„	10 p.m.	127° 5′	26°35′	NE	31.9

Date	Time	Position of Centre		Direct.	Speed.
10th	6 a.m.	128°45′ E	28°10′ N	NE	41.2 km.p.h.
„	2 p.m.	131° 5′	30°15′	NE	35.0
„	10 p.m.	133° 7′	32°00′	NE	41.2
11th	6 a.m.	135°50′	34°00′	NE	30.9
„	2 p.m.	138°00′	35°20′	NE	47.4
„	10 p.m.	141°35′	37°15′	NE	

A severe rainstorm prevailed on our Pacific coast during the visitation of this typhoon, and caused a great deal of damage in life and property. The storm was especially heavy in Kiushiu, Shikoku and Tokaido. Many houses were blown down by high winds with loss of life. Still great many of buildings were inundated by flood. A damage was not less off the coast. In the harbour of Susami in the Kii peninsula S.S. Wakayamamaru was stranded by the heavy gales and waves, and broken into pieces at 3am of the 11th. Fifty three passengers and crews were drowned. In the harbour of Kobe about thirty lighters and small crafts sunk In the prefecture of Yamanashi a heavy rainfall continued from the midnight of the 10th to 1pm of the 11th. Several rivers in the prefecture rose to a considerable height, and some of them overflowed their banks, causing suspension of trafic.

The lowest of the barometer observed was 732.9mm. at Nafa at 9pm on the 9th. The greatest of the wind velocity observed was 31.7m.p.s at 5pm of the 11th at Mera

2. The Typhoon on July 15 to 22nd.

This typhoon was forming from the 12th to the 14th to the east of the Batanes Islands or of Balintang Channel. On the 15th it appeared to the south of the Okinawa Islands. Advancing towards NW the typhoon crossed Northern Formosa on the night of the 17th and landed on the Continent on the morning of the 18th. On the same day the typhoon recurved towards NE in the west of Hangchow, and on the 19th it passed the neighbourhood of Nanking. Crossing over the Yellow Sea the typhoon landed on N Korea and travelled along the north coast of the Peninsula up to Vladiostok. On the 21st the typhoon traversed N Japan Sea and visited Southern Saghalien Island.

In Formosa a heavy storm of wind and rain prevailed during the passage of this typhoon. A rainfall was very heavy in the southern part of the island. The total fall for the forty-eight hours from 5am on the 17th to 5am on the 19th was 23mm at Keelung; 57mm at Taihoku; 203mm at Taichu; 423mm at Tainan; 45mm at Taito; 237mm at Koshun and 68mm at Hokoto (the Pescadores). Owing to the excessive rainfall the rivers and creeks flooded over their banks, causing a temporary suspension of trafic and of telegraphic communication. Fortunately the force of gales attending

the typhoon was not heavy. At the Ishigakijima Meteorological station the velocity of wind reached 34.2m.p.s at 4pm on the 17th. At Taito on the southeast coast of Formosa the velocity of 24m.p.s was observed.

In Southern China the heavy rainstorm was experienced. We give below the direction and speed of the typhoon :—

Day	Hour	Position		Direction	Speed.
15th	6 a.m.	17°55′ N	128° E	NW	13.0 km p.h.
16th	6 a.m.	19°50′	125°50′	NW	21.6
,,	2 p.m.	20°50′	124°40′	NW	17.5
,,	10 p.m.	21°45′	123°45′	NW	18.5
17th	6 a.m.	22°50′	122°50′	NW	15.4
,,	2 p.m.	23°40′	122° 5′	NW	17.5
,,	10 p.m.	24°40′	121°15′	NW	27.8
18th	6 a.m.	26°20′	120°	NNW	45.3
,,	2 p.m.	29°10′	118°30′	N	22.7
,,	10 p.m.	30°45′	118°35′	N	22.7
19th	6 a.m.	32°20′	119°10′	NNE	55.6
,,	2 p.m.	35°35′	121°55′	NE	30.6
,,	10 p.m.	37°10′	123°35′	NE	55.6
20th	6 a.m.	40°	127°	NE	17.5
,,	2 p.m.	40°55′	128°	NE	60.8
,,	10 p.m.	43°50′	132°15′	NE	79.3
21st	6 a.m.	46°50′	138°50′	NE	20.6
,,	2 p.m.	47°35′	140°35′	NE	14.4
,,	10 p.m.	48° 5′	142°	NE	14.4
22nd	6 a.m.	48°35′	143°10′	NE	

3. The Typhoon of August 7 to 11th.

The birth place of this typhoon is not known with certainty. On the 6th it appeared to the east of Luzon. Moving towards the north it passed between Formosa and the Yaeyama Islands on the 7th. After recurving towards NE the typhoon passed the neighbourhood of the Okinawa Islands on the 8th, and travelled along our south coast up to the Boso Peninsula. On the 11th it passed away from our area.

Since the 6th of August the barometric distribution was rather abnormal. The high area was lying over the Kuriles and the northern part of the North Pacific, its margin extending towards Eastern and Central Japan, so that the isobars were of a wedge-shape. In these districts easterly to southeasterly winds prevailed for many days, and rain continued to fall. In the front of this advancing typhoon the fall became very heavy. As the cyclonic centre drew near our Southeast coast the downpour of rain occurred

at many localities, in the mountainous districts of Southeastern Japan. The following extracts of the records of the raingauge stations will show that how enormous the fall was.

Rainfall from August 6 to 11th, 1910.

Station	Prefecture	Rainfall	Station	Prefecture	Rainfall
Yumoto	Kanagawa	847.1 mm.	Kawasaki	Shizuoka	776.2 mm.
Hakone	„	1082.8 „	Wakaizumi	Saitama	720.3 „
Ôyama	„	742.2 „	Nogami	„	735.0 „
Mikuriya	Shizuoka	749.7 „	Naguri	„	706.3 „
Kawashiro	„	954.4 „	Chuguji	Tochigi	772.2 „

Owing to this excessive rainfall the rivers in Southeastern Japan rapidly rose to considerable height, and flowed over their banks, inundating the whole of the low land of the district. Many bridges were swept away and railways were destroyed in many places, so that trafic and telegraphic communications were almost suspended. According to the official statistics the number of houses destroyed was 6597 and the loss of human lives 1231. The houses and buildings inundated amounts 518012 in number, of which 182467 were in Tokio. We give below the direction and speed of this typhoon:—

Day	Hour	Position		Direction	Speed.
7th	6 a.m.	22°50′ N	122°15′ E	N	38.1 km.p.h.
„	2 p.m.	25°20′	123°10′	NE	14.4
„	10 p.m.	25°55′	124°	ENE	54.6
8th	6 a.m.	27°	128° 5′	ENE	16.5
„	2 p.m.	27°30′	129°20′	NE	9 3
„	10 p m.	27°45′	130°	NE	9.3
9th	6 a.m.	28°10′	130°35′	NE	17.5
„	2 p.m.	28°50′	131°45′	NE	35.0
„	10 p.m.	30°10′	134° 5′	NE	27.8
10th	6 a.m.	31°15′	136°	NE	18.5
„	2 p.m.	32°	137°15′	NE	35.0
„	10 p.m.	33°35′	139°35′	NE	21.6
11th	6 a.m.	34°40′	141°	NE	25.7
„	2 p.m.	36°	142°35′	NE	25.7
„	10 p.m.	37°25′	144°	NE	

4. *The Typhoon of August 10 to 14th.*

This typhoon appeared to the south of the Yaeyama Islands on the 10th. Moving towards NW it passed the Islands and Northern Formosa. It recurved towards NNE on the evening of the same day, and travelled over the Eastern Sea.

After passing the Ôsumi (Van Diemen) strait on the 12th the cyclonic centre advanced along our South coast and landed on SE Japan on the night of the 13th. On the night of the 14th the typhoon filled up in Northeastern Japan. A heavy rainstorm prevailed on the SE coast, causing many disaster off the coast. We give below the direction and speed of the typhoon:—

Day	Hour	Position		Direction	Speed.
10th	6 a.m.	23° N	123°20′ E	NW	59.7 km.p.h.
„	2 p.m.	26°50′	123°10′	NE	15.5
11th	6 a.m.	28°10′	125°	ENE	12 4
„	2 p.m.	28°35′	125°55′	ENE	11.3
„	10 p.m.	29°	126°45′	ENE	17.5
12th	6 a.m.	29°30′	128°	ENE	36.0
„	2 p m.	30°20′	130°45′	ENE	46.3
„	10 p.m.	31°50′	134°15′	ENE	33 0
13th	6 a m.	33°	136°35′	ENE	16.5
„	2 p.m.	33°50′	137°40′	ENE	10.3
„	10 p.m.	34°30′	138°10′	NE	18.5
14th	6 a.m.	35°40′	138°50′	NE	8.2
„	2 p.m.	36°20′	139° 5′	NE	18.5
„	10 p.m.	37°30′	139°50′	NE	

5. *The Typhoon of August 28 to 31st.*

According to the investigation of the Manila Central Observatory this typhoon seems to have developed to the southwest of the Batanes Islands about the 26th. First the typhoon took a northeasterly course and arrived the neighbourhood of Santo Domingo on the evening of the 28th. Whence it recurved towards north and then towards northwest. On the morning of the 29th the typhoon appeared to the southeast of South Cape of Formosa. We reproduce here the result of the observations* made at Santo Domingo, Batanes Islands during the visitation of the typhoon.

Meteorological Observations made at Santo Domingo,
Batanes Islands, August 27 to 29, 1910.

Date and Hour	Barometer	Wind direction	Force	Rainfall
24th 2 p.m.	749.78	ESE to SE	5 (Beauf.)	—

* From Bulletin for August, 1910. Manila Observatory. p. 247.

Date and Hour		Barometer	Wind direction	Force	Rainfall
27th	3 p.m.	49.41	ESE to SE	5	—
,,	4 p.m.	48.90	E to ESE	5	—
,,	5 p m.	48.49	SE to SSE	6	—
,,	6 p.m.	47.69	SE	6	—
,,	7 p.m.	48.73	SSE	5	—
,,	8 p m.	49.29	SSE	4	—
,,	9 p.m.	49.09	SSE	4	—
,,	10 p.m.	47.73	SSE	3	—
,,	11 p.m.	45.89	ESE	5	—
,,	mn.	44.47	SE	5	259 6 mm.
28th	1 a.m.	42.21	SSE	2	—
,,	2 a.m.	41.89	SSW	4	—
,,	3 a.m.	41.40	SSW	6	—
,,	4 a.m.	43.20	SSW	8	—
,,	5 a.m.	43.42	SSW	7	—
,,	6 a.m.	44.27	SSW	7	—
,,	7 a.m.	44.70	S	6	—
,,	8 a m.	45.24	S	6	—
,,	9 a.m.	45.10	SSE	5	—
,,	10 a.m.	44.84	SSE	6	—
,,	11 a.m.	43 82	SSE	6	—
,,	noon.	43.21	SSW	8	—
,,	1 p.m.	42.87	SSW	9	—
,,	2 p.m.	43.07	SSW	8	—
,,	3 p.m.	43.18	SSW	6	—
,,	4 p.m.	42.99	SW	10	—
,,	5 p.m.	44.34	SW	9	—
,,	6 p.m.	46.?	SW	8	—
,,	7 p.m.	47.09	WSW	7	—
,,	8 p m.	47.79	WSW	5	—
,,	9 p.m.	48 96	WSW	4	—
,,	10 p m.	49.55	SW	4	209.8 mm.
29th	6 a.m.	52.52	S	1	—
,,	2 p.m.	52.96	SSW	2	19.1 mm.

Moving towards the northwest the typhoon crossed the southern extremities of Formosa, and entered the China Sea. It passed south of Hongkong on the afternoon of August 31, and north of Hainan on the morning of September 1.

In Southern Formosa a heavy rainstorm prevailed during the visitation of the typhoon. At Koshun in Southern Formosa the severe gale continued over the whole day of the 29th. The storm was most serious from 11am to 3pm. The mean wind velocity for one hour from the noon to 1pm was 43.1m.p.s, and that for 15 minutes from oh 15m.p.m. to oh 30m.p.m was 56.8m.p.s. In most places in Southern Formosa the amount of rainfall was over 200mm. The total fall for the 29th was 433.7mm at Koshun and 422.6mm at Kishikaku.

At the street of Koshun the rain water was knee-deep, and the whole city looked like a vast lake. Telegraphic and telephonic communications were suspended. There was a great deal of damage in plantations and properties, but luckily no loss of human life.

The following is the extract of the Meteorological Observations made at the Koshun Observatory, August 29th, 1910.

Hour	Barometer	Wind velocity	Wind direction	Rainfall
9 a m.	746.7	18.0 m.p.s.	NW	17.4
10 a.m.	44 5	22.9	NW	12.4
11 a m.	42 0	27.3	NNW	35 5
11.15 a m.	41.0	—	NNW	—
11.30 a.m.	39.2	—	NNW	—
11.45 a.m.	37.9	—	NW	—
Noon	36.6	34.6	NW	39.3
0.15 p.m.	34.5	35.7	WNW	—
0.30 p.m.	35.3	56.8	WNW	—
0.45 p.m.	35.8	40.6	WNW	—
1. p.m.	36.4	39.2	W	41.1
1.15 p.m.	38.7	—	WSW	—
1.30 p.m.	40.5	—	SW	—
1.45 p.m.	41.9	—	SW	—
2. p.m.	43.5	38.5	SW	112.2
2.30 p.m	45.1	—	SSW	—
3. p.m.	46.6	20.7	SSW	82.0
3.30 p.m.	48.1	—	SSW	—
4. p.m.	48.5	18.5	S	8.5

6. The Typhoon of August 30 to September 6.

The birth place of this typhoon was not known with certainty, but it was probable that it came from the neighbourhood of the Marianne Islands. On the morning of the 30th the typhoon appeared to the southeast of the Okinawa Islands. Moving towards the northwest the typhoon centre arrived to the south of the Islands where it recurved

towards the west on the 31st. Continuing the westward course the centre passed over the north of the Yaeyama Islands on September 1st and approached Northern Formosa on the 2nd. Thence the typhoon slowly recurved towards WSW and moved along the west coast of the Formosa strait, and passed the neighbourhood of Hongkong on the 4th and Hainan on the 5th. On the 6th it visited Indo-China where it filled up. The track of this typhoon was of very abnormal character.

S. S. Yawatamaru (Captain T. Sekine) on the route from Hongkong to Nagasaki met this terrible typhoon in the sea to the north of Formosa on September 2. Calming the breaking waves by oil the ship made a narrow escape from the peril of being overwhelmed by the tremendous waves. Between 4am. and 5am. on the 2nd. the eye of the storm passed over the Yawatamaru. According to the observations taken on board by Mr. Takeda, the officer of the ship, the wind was northwesterly first before she entered into the eye of the storm and was blowing with the force of a gale. About 4h 40m am. the wind suddenly died away, and became calm. The cloud was dissipated and the sky was completly cleared up. The dark blue firmament was spotted by twinkling stars, and the moon was shining. At the same hour the barometer fell to 27.76 inches (706.6 mm). Small land birds flocked to the ship and were hovering about it. Most of them were so fainting that the sailors caught some of the birds by hands. About 5h 10m the gale began to blow from the opposite direction

We give below the extract of the meteorological log of the ship :—

Report of N. Y. K. Co. SS. Yawatamaru. Captain T. Sekine.

From Hongkong to Nagasaki.—September 1 to 2, 1910.

Date	Hour	Lat.	Long.	Barom.	Wind direct.	Wind force	Remarks
1st	2 a.m.	22°38′N	116°00′E	29.66 inch.	ESE	3	Clear sky.
„	6 a.m.	23°00′	117°00′	29.66	E	3	Fair
„	10 a.m.	23°35′	117°50′	29.70	NW	1	Cloudy. Swell from SW
„	2 p.m.	24° 9′	118°34′	19.65	S	3	Overcast. Swell.
„	6 p.m.	24°42′	119°22′	29.67	SW	4	Cloudy „
„	10 p.m.	25°18′	120° 7′	29.51	SW	3	Overcast with some rain.
2nd	2 a.m.	25°49′	120°40′	29.10	NW/W	8	Rain.
„	6 a.m.	25°52′	120°40′	28.40	E by S	10	Rain.
„	10 a.m.	26°00′	120°52′	29.38	E	9	Overcast
„	2 p.m.	26°14′	121°23′	29.49	NE/E	6	Overcast.

S. S. Miyajimamaru of the Osaka Shosen Kaisha Co. departed Nafa on August 30th and anchored in Miyakoshima on the 31st. We give below the meteorological observations taken on board the vessel during the visitation of the typhoon.

Report of O. S. K. Co. S. S Miyajimamaru.—Captain.

From Nafa to Keelung.—September 1 to 2, 1910.

Date	Hour	Wind direct.	Wind force	Barom.	Weather.
31th	noon	NW	5	29.23 inch	Cloudy
,,	4 p.m.	N	6	29.09	Rain
,,	8 p.m.	NW	7	28.96	,,
,,	m.n.	W	7 to 8	28.81	,,
1st	1 a.m.	W	7 to 8	28.81	,,
,,	2 a.m.	WSW	7 to 8	28.81	,,
,,	3 a.m.	SW	7 to 8	28.81	,,
,,	4 a m.	SW	7	28.83	,
,,	8 a.m.	SW	7	28.97	
,,	noon	SW	6	29.12	,,
,,	4 p.m.	SSW	5	29.16	,,
,,	8 p.m.	SSW	3	29.22	Cloudy
,,	m.n.	S	2	29.25	Fair
2nd	8 a.m.	SE	1 to 2	29.27	Cloudy
,,	noon	W	1	29 27	Cloudy

In Northern Formosa a heavy rainstorm prevailed during the visitation of the typhoon and caused a great deal of damage in life and property.

We give below the direction and speed of this typhoon :—

	Date	Time	Lat.	Long.	Direct	Speed.
Aug.	30th	6 a.m.	22°30′ N	133°35′ E	WNW	20.6 km.p.h.
	,,	2 p.m.	23°10′	132°15′	WNW	26.8
	,,	10 p.m.	23°55′	130°25′	WNW	33.0
	31st	6 a.m.	24°45′	128° 5′	WNW	23.7
	,,	2 p.m.	25°15′	126°20′	WNW	11.3
	,,	10 p.m.	25°30′	125°30′	WNW	12 4
Sept.	1st	6 a.m.	25°40′	124°35′	WNW	12.4
	,,	2 p m.	25°50′	123°35′	W	14.4
	,,	10 p.m.	26°	122°15′	W	8.2
	2nd	6 a.m.	26°	121°50′	W	14.4
	,,	2 p m.	25°50′	120°40′	WSW	17.5
	,,	10 p.m.	25°15′	119°30′	SW	36.0
	3rd	6 a.m.	23°45′	117°15′	SW	26.8
	,,	2 p.m.	22°55′	115°20′	SW	19.6
	4th	6 a m.	22°	112°30′	WSW	

7. *The Typhoon of September 2 to 9th.*

This typhoon appeared in the sea to the east of Luzon on September 2nd. Mov-

ing towards NW the typhoon passed the south of the Miyakoshima on the afternoon of the 5th. Thence it recurved towards NE, and passed the east of the Okinawa Islands on the 6th. The typhoon visited Kiushiu on the 7th, and travelled towards the east over the Inland Sea on the 8th. On the 9th the centre passed the neighbourhood of Hachijo Island. The typhoon caused a heavy rainfall in Western Japan, which resulted in a great deal of damage by inundation. But as the typhoon lost its energy and turned into a shallow barometric depression on its way towards Eastern Japan no serious storm was experienced in the latter district. We give below the direction and speed of this typhoon :—

Date	Hour	Lat.	Long.	Direction	Speed.
3rd	6 a.m.	18°10′ N	128°45′ E	NW	8.6
4th	6 a.m.	19°30′	127°35′	NW	9.3
5th	6 a m.	21°15′	126°30′	NW	21.6
,,	2 p.m.	22°40′	125°55′	N	17.5
,,	10 p.m.	23°55′	125°50′	N	23.7
6th	6 a.m.	25°35′	126°25′	NNE	14.4
,,	2 p.m.	26°30′	126°50′	NNE	33.0
,,	10 p.m.	28°35′	127°50′	NE	19.6
7th	6 a m.	29°55′	128°30′	NE	27.8
,,	2 p.m.	31°45′	129°30′	NE	10 3
,,	10 p.m.	32°20′	130°	NE	21.6
8th	6 a m.	33°20′	131°20′	ENE	11.3
,,	2 p.m.	33°40′	132°15′	E	16.5
,,	10 p.m.	33°55′	133°40′	E	22 7
9th	6 a.m.	34°10′	135°35′	E	41.2
,,	2 p.m.	34°20′	139°10′	E	

8. *The Typhoon of September 26 to 30th.*

This typhoon appeared to the south of the Riukiu Islands on the 26th. Moving towards the west it passed over the Bashee strait on the 28th and the south of the Platas Islands on the 29th. On the 30th it passed to the sea south of Hongkong. We give below the direction and speed of this typhoon :—

Date	Hour	Lat.	Long.	Direction	Speed.
26th	10 p.m.	19°45′ N	128°25′ E	W	33.0 km.p.h.
27th	6 a.m.	20°10′	126°	W	11.7
28th	6 a m.	20°25′	123°25′	W	19.6
29th	6 a.m.	20°25′	119°15′	W	7.2
30th	6 a.m.	20°20′	117°35′	W	

During the passage of this typhoon a heavy rainstorm prevailed in Formosa, causing a great deal of damage by inundation.

9. *The Typhoon of October 7 to 15th.*

This typhoon was originated between Guam and Yap on September 27. Moving towards NNW the centre appeared to the east of the Philippines on the morning of October 7th. It passed the neighbourhood of the Okinawa Islands on the 10th and recurved towards ENE on the 11th. It entered the Pacific on the 12th and passed near Hachijo Island on the 15th. We give below the direction and speed of this typhoon :—

Date	Hour	Lat.	Long.	Direction	Speed.
7th	6 a m.	15°35′ N	130°10′ E	NNW	25.1
8th	6 a.m.	20°40′	128°20′	NNW	6 9
9th	6 a m.	22°	127°55′	NNW	15.8
10th	6 a m.	25°20′	126°55′	N	4 5
11th	6 a m.	26°10′	127°10′	NNE	8.6
12th	6 a m.	27°15′	128°45′	NE	15.4
13th	6 a m.	28°50′	132°	NE	10.6
14th	6 a m.	29°50′	134°15′	NE	14 7
15th	6 a m.	32°	139°50′	NE	

A heavy rainstorm prevailed in the Riukiu Islands and Formosa. In the Riukiu the number of house destroyed amounted 137 and that of damaged 114. Two persons were perished. The damage of plantation was heavy. In the harbour of Nafa, central Riukiu, S. S. Miuramaru (84 tonnage) was stranded. Twelve passengers on board were lost.

According to the report of the Nafa Meteorological Observatory the barometer fell to 730.1mm at 0h 30m pm on the 11th. The maximum speed of wind was 6.6m.p.s at 9pm on the 11th. One of the Robinson anemometers and an anemoscope were blown down by the gale. We give below the extract of the meteorological records :—

The report of the Nafa Meteorological Observatory.

From October 11 to 12, 1910.

Date	Hour	Barom.	Temp.	Wind direct.	Wind speed.	Rain	Weather
11th	2 a m.	744.7	23.6	ESE	15 8	8.3	rain
,,	3 a.m.	743.5	23.5	ESE	17.2	8.9	rain
,,	4 a.m.	742.5	23.2	ESE	18.2	14 8	rain
,,	5 a m.	741.9	23.4	ESE	18 5	30 5	rain
,,	6 a m.	740 9	23 5	ESE	19 3	25 2	rain
,,	7 a.m	740 0	23.8	ESE	19 7	20 2	rain

Date	Hour	Barom.	Temp.	Wind direct.	Wind speed.	Rain	Weather
11th	8 a.m.	739.5	23 9	ESE	20 0	11.0	rain
,,	9 a.m.	738.4	24 4	SE	20.6	9 8	rain
,,	10 a m.	736.8	24.2	SE	22.3	13 7	rain
,,	11 a m.	734.9	24 2	SE	27.0	30 8	rain
,,	Noon	731.7	24 4	SE	18 9	26 4	rain
,,	1 p m	730.3	25.0	S	13 4	6 5	rain
,,	2 p m.	731 2	25.0	S	12.7	1.5	rain
,,	3 p.m.	731.2	25.4	SSW	13.1	1.0	rain
,,	4 p m.	731.7	25 4	SW	13.2	2.2	rain
,,	5 p m.	731.9	25.4	WSW	15 9	0 5	rain
,,	6 p.m.	732 9	25.6	WSW	16.0	0.1	rain
,,	7 p m.	734 2	25 3	W	15.8	0 0	rain
,,	8 p.m	737.1	24 1	W	22.9	0.7	rain
,,	9 p.m.	738.3	23.0	W	36 6	3 1	rain
,,	10 p m	740.4	22.8	WNW	29.0	3.0	rain
,,	11 p.m.	741.2	22 4	WNW	27 0	7 9	rain
,,	m n.	742 5	21 7	WNW	27 5	18 1	rain
12th	1 a m.	743 6	21 2	WNW	28 8	13 0	rain
,,	2 a m	745 1	21.3	WNW	29 8	2 6	rain

THE END.

PL. I.

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

January, 1910.
Part 1.

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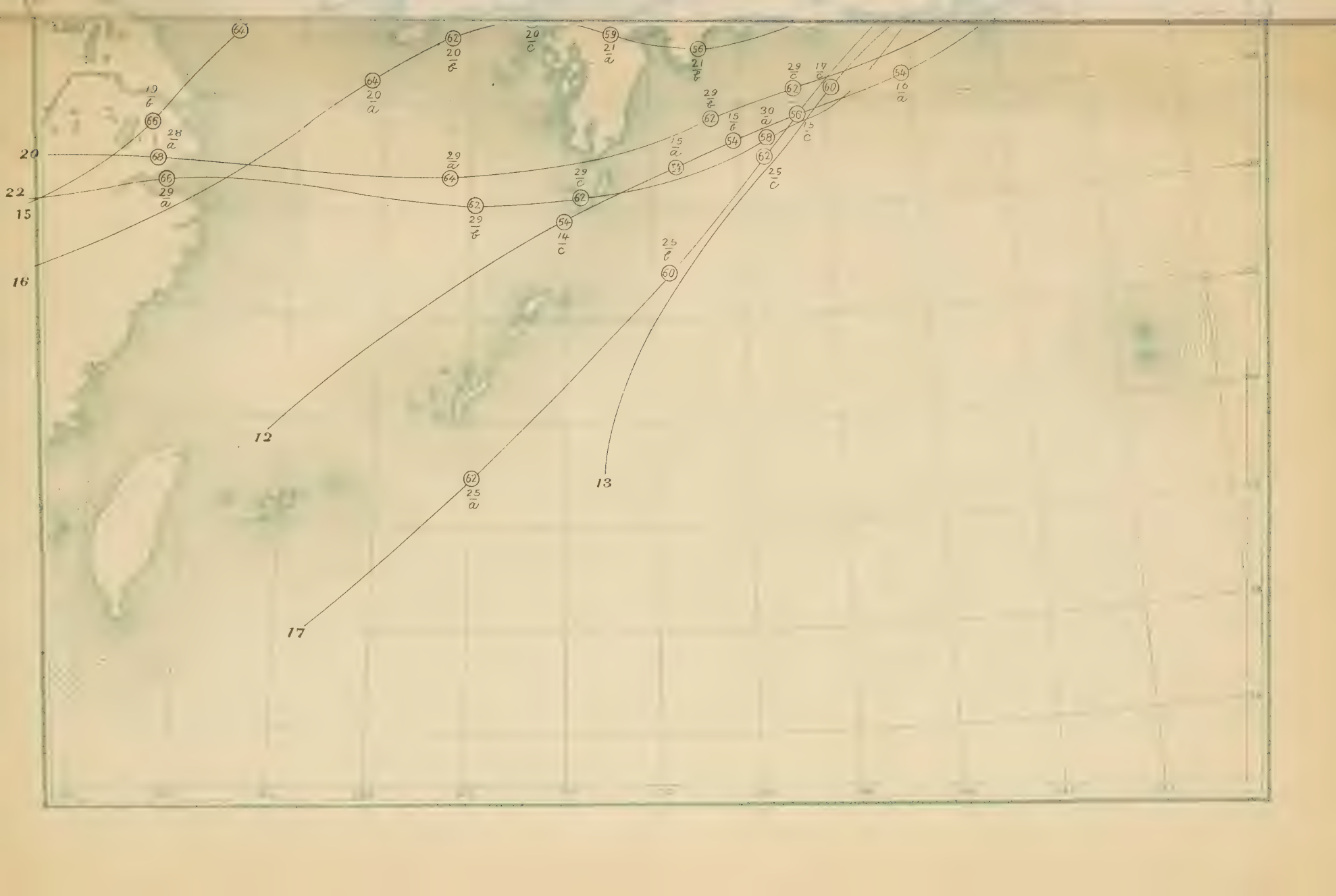
TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

January. 1910.
Part 2.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20 C
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21 a
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21 b
19 b
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28 a
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20 b
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66
29 a
62
29 b
29 c
62
54
14 c
12
29 b
62
15 a
54
29 c
62
15 b
54
30 a
58
62
25 c
15 c
56
17 c
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10 a
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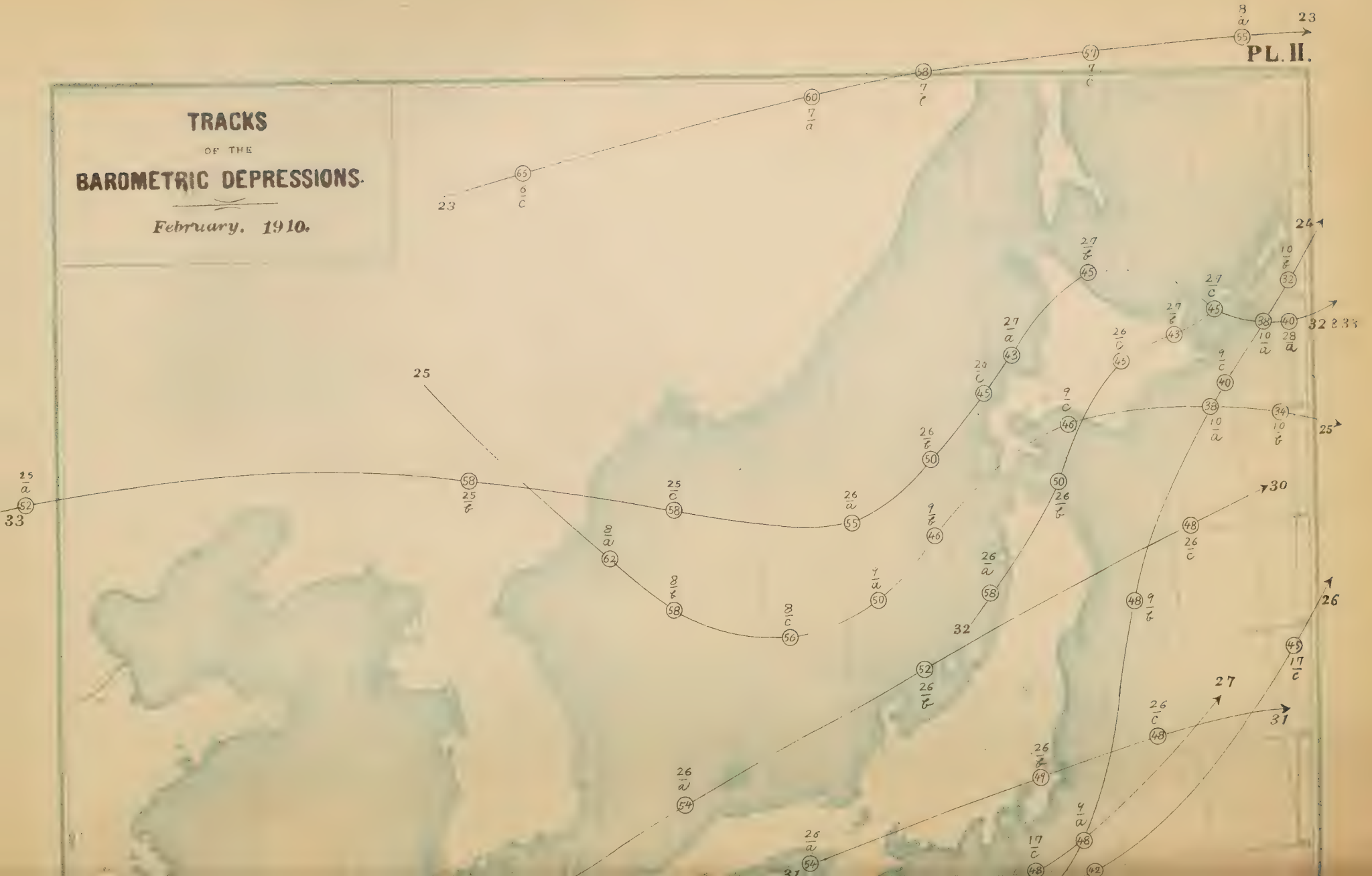
PL. II.

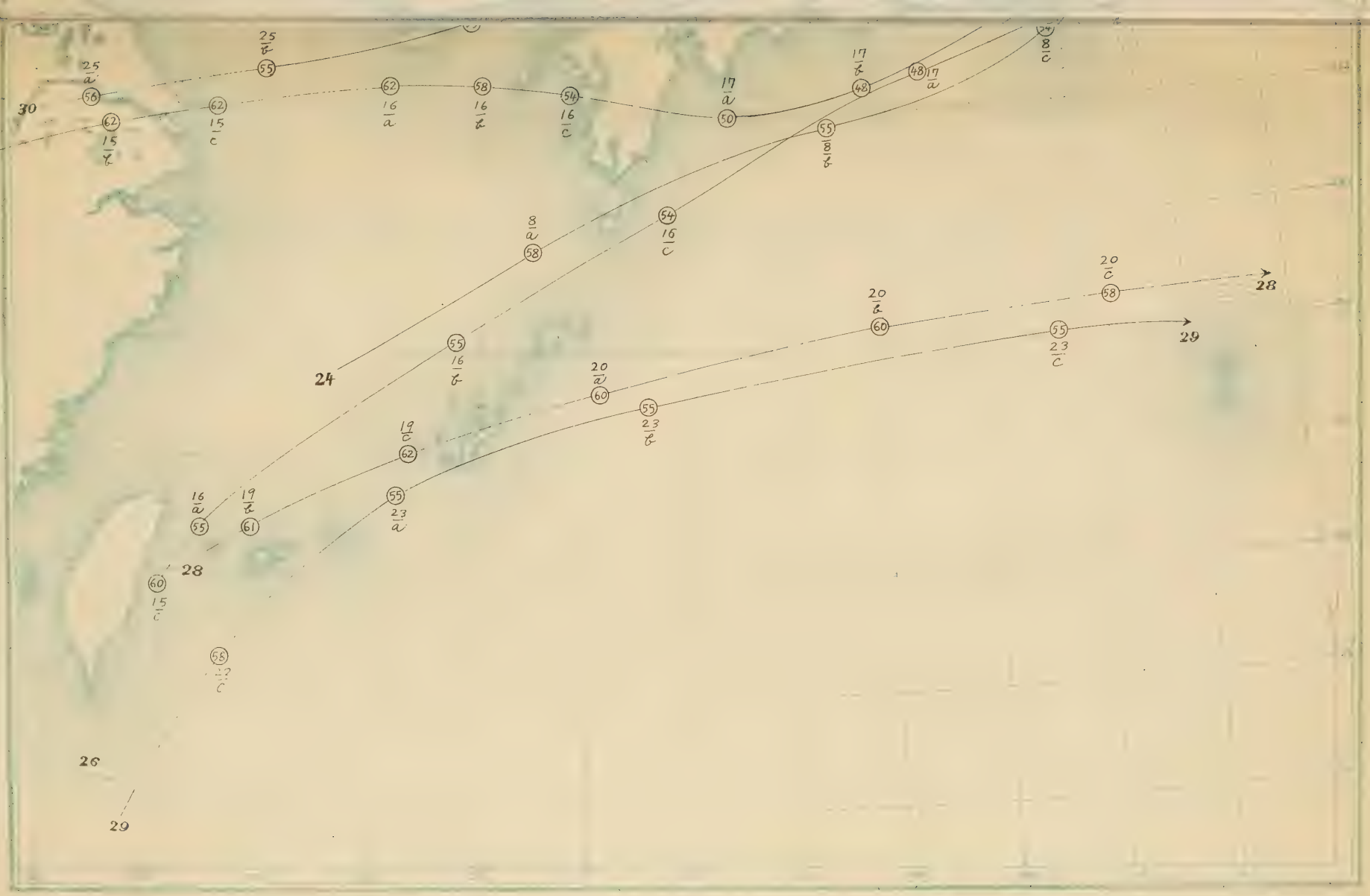
TRACKS

OF THE

BAROMETRIC DEPRESSIONS.

February, 1910.

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25 b 55
62 15 c
62 15 b
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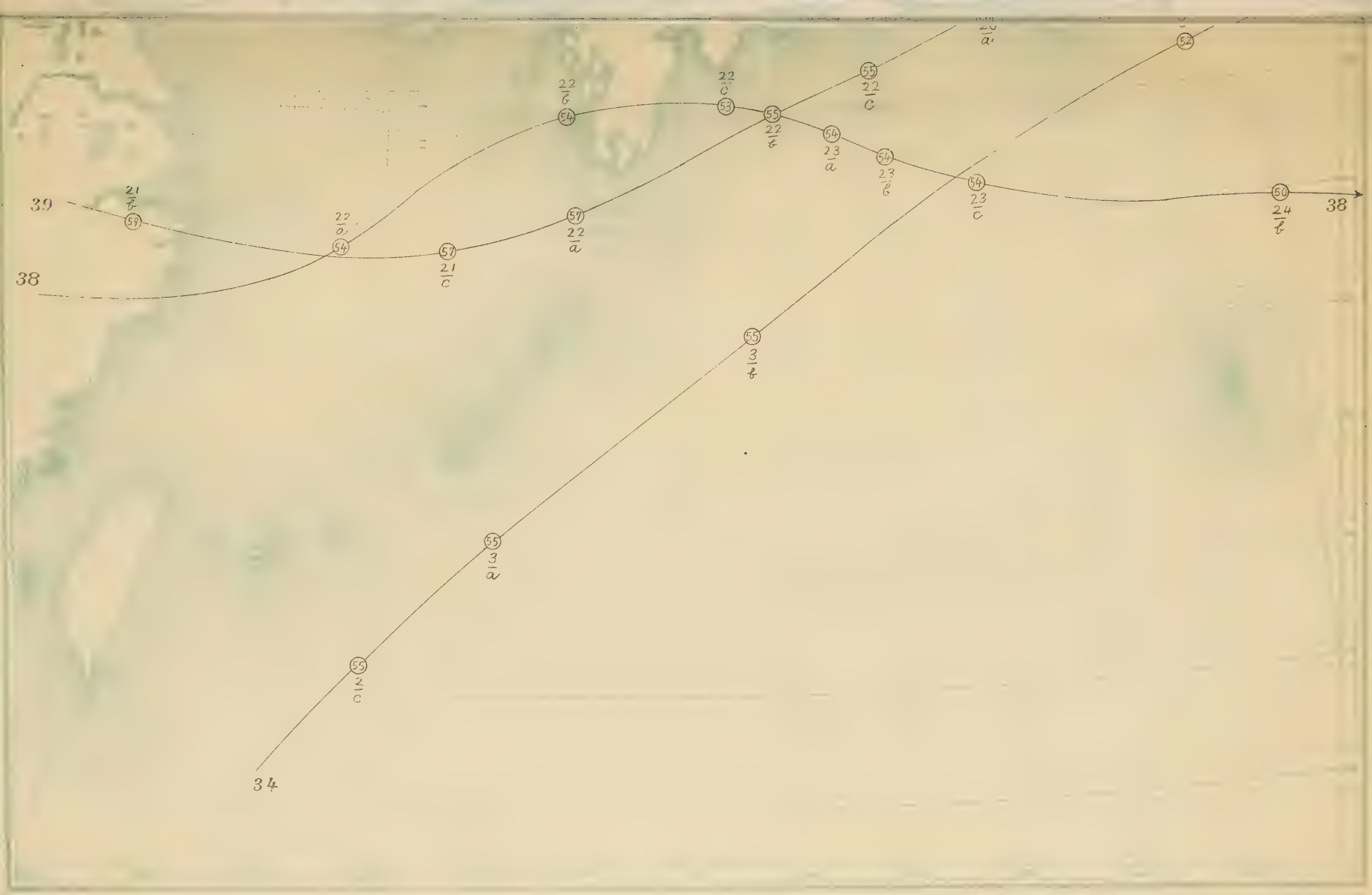
58 16 b
54 16 c
17 a 50
17 b 48
48 17 a
55 8 b
24 8 c
8 a 58
54 16 c
55 16 b
20 c 58
20 b 60
55 23 c
20 a 60
55 23 b
19 c 62
16 a 55
19 b 61
55 23 a
60 15 c
58 ? c

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

March, 1910.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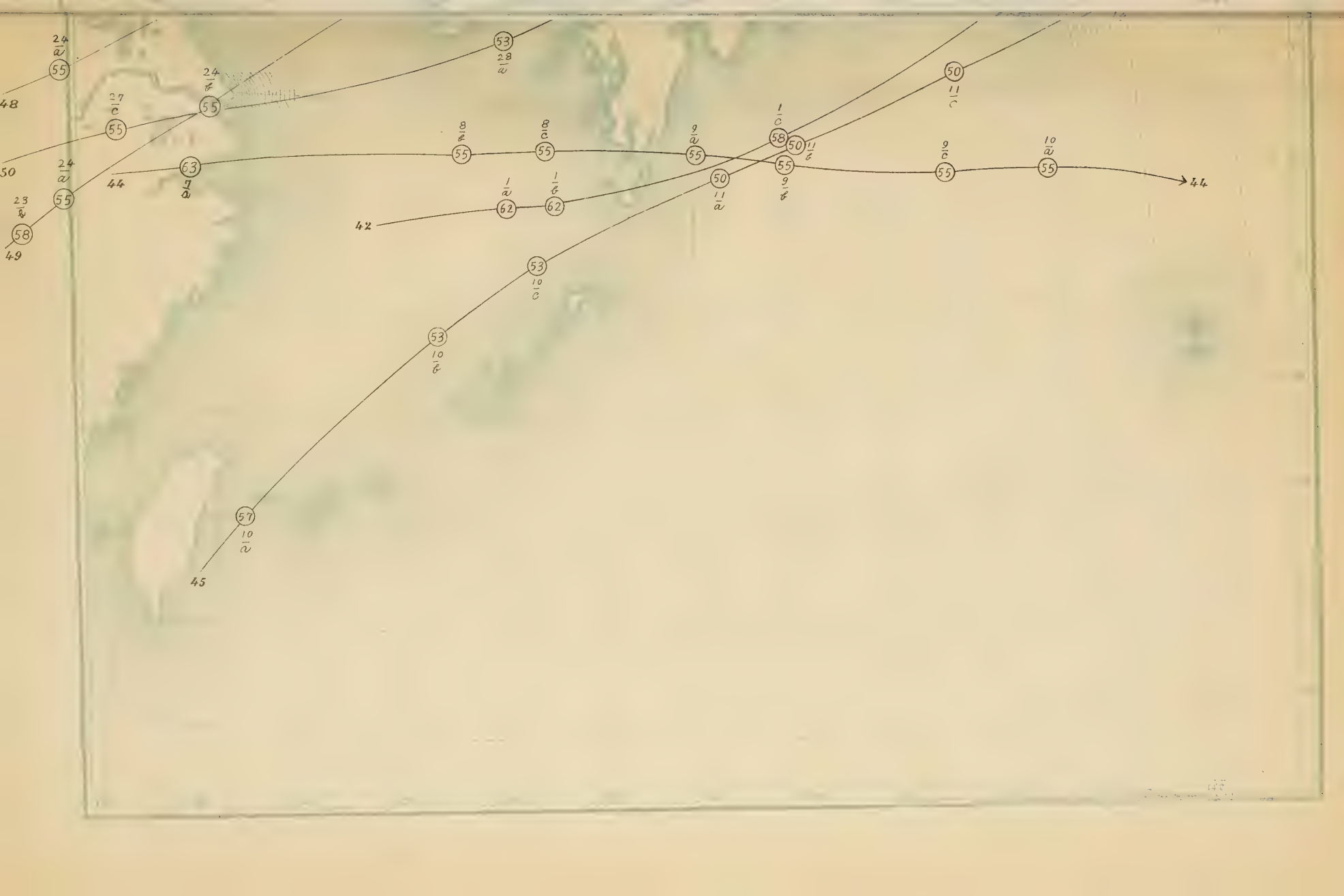
22/a
21/c
22/b
22/c
22/a
22/b
22/c
23/a
23/b
23/c
24/b
3/b
3/a
2/c

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

April, 1910.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48
27 c̄ 55
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50
24 ā 55
23 d̄ 58
49
44
63 J d̄
8 b̄ 55
8 c̄ 55
9 ā 55
1 c̄ 58
50 11 b̄
11 c̄ 50
9 c̄ 55
10 ā 55
44
1 ā 62
1 b̄ 62
42
50 11 ā
55 9 b̄
53 10 c̄
53 10 b̄
57 10 ā
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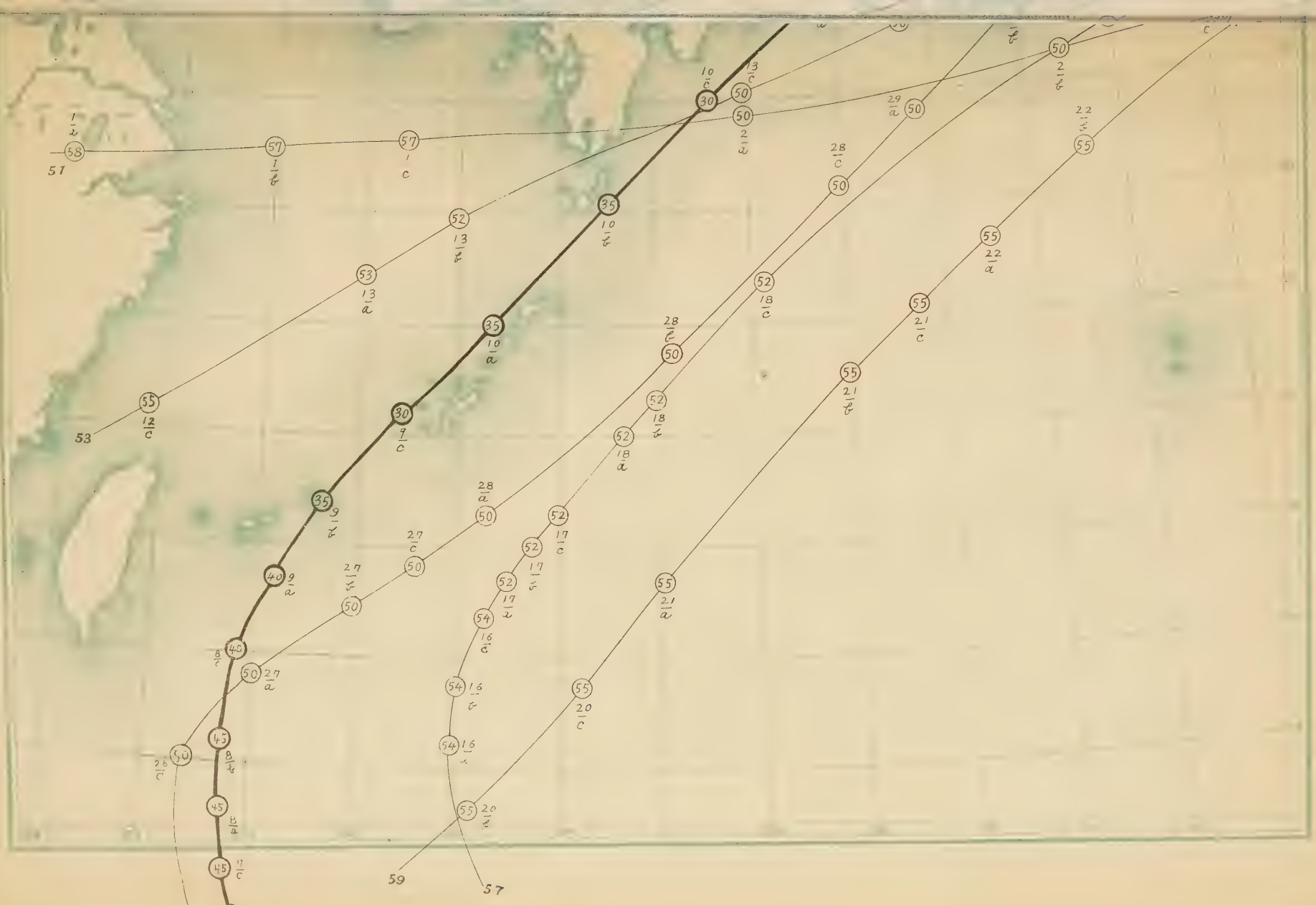
TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

May, 1910.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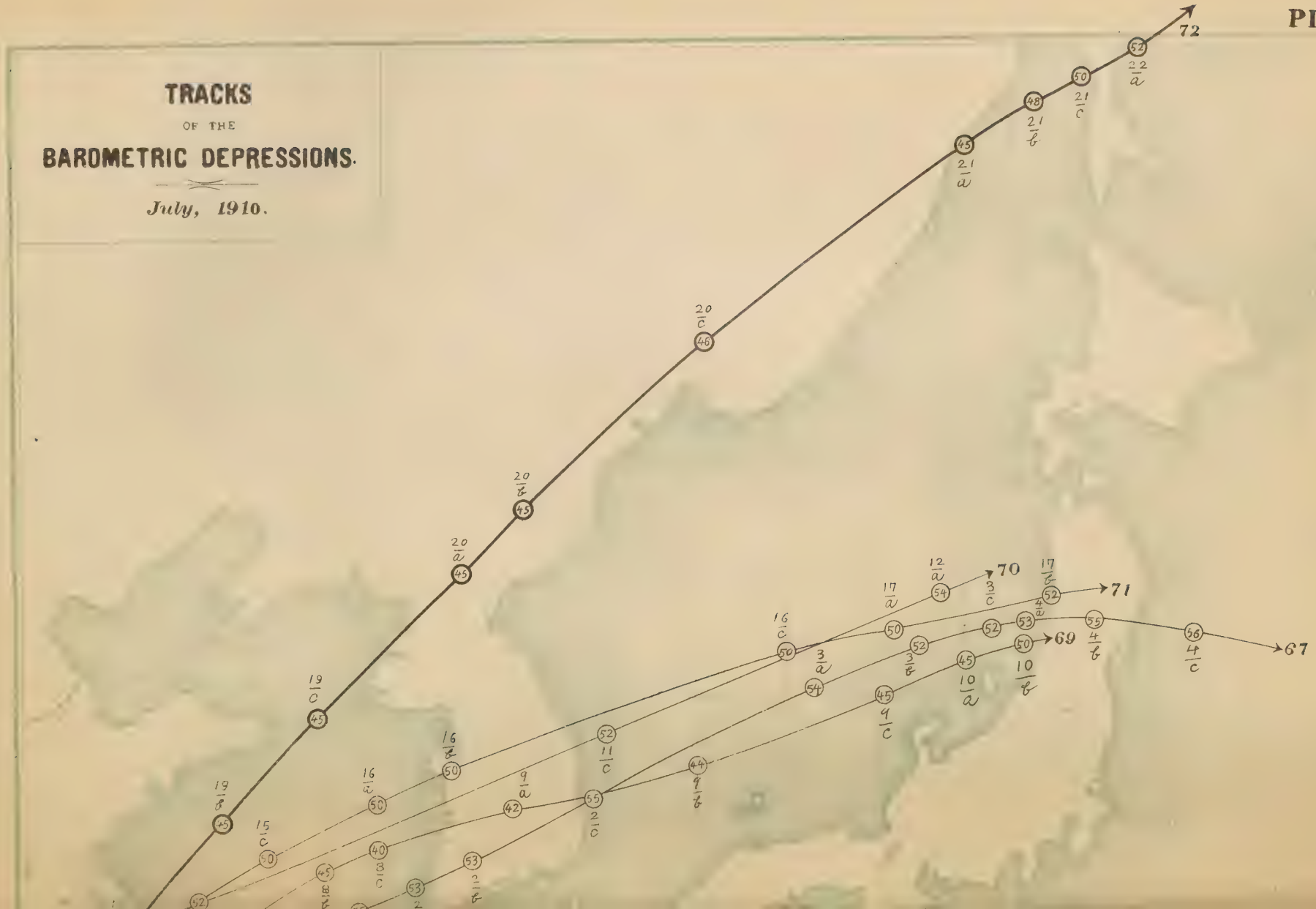
50 2/t
50 29/a
55 22/t
55 22/a
52 13/t
35 10/t
53 13/a
35 10/a
55 12/c
30 9/c
50 28/c
52 18/c
52 18/t
52 18/a
35 9/t
28/a 50
27/c 50
52 17/c
52 17/t
40 9/a
27/t 50
54 16/c
54 16/t
55 21/c
55 21/t
55 21/a
45 8/c
50 27/a
54 16/t
55 20/c
50 26/c
45 8/t
45 8/a
45 17/c
45 7/t
59
57

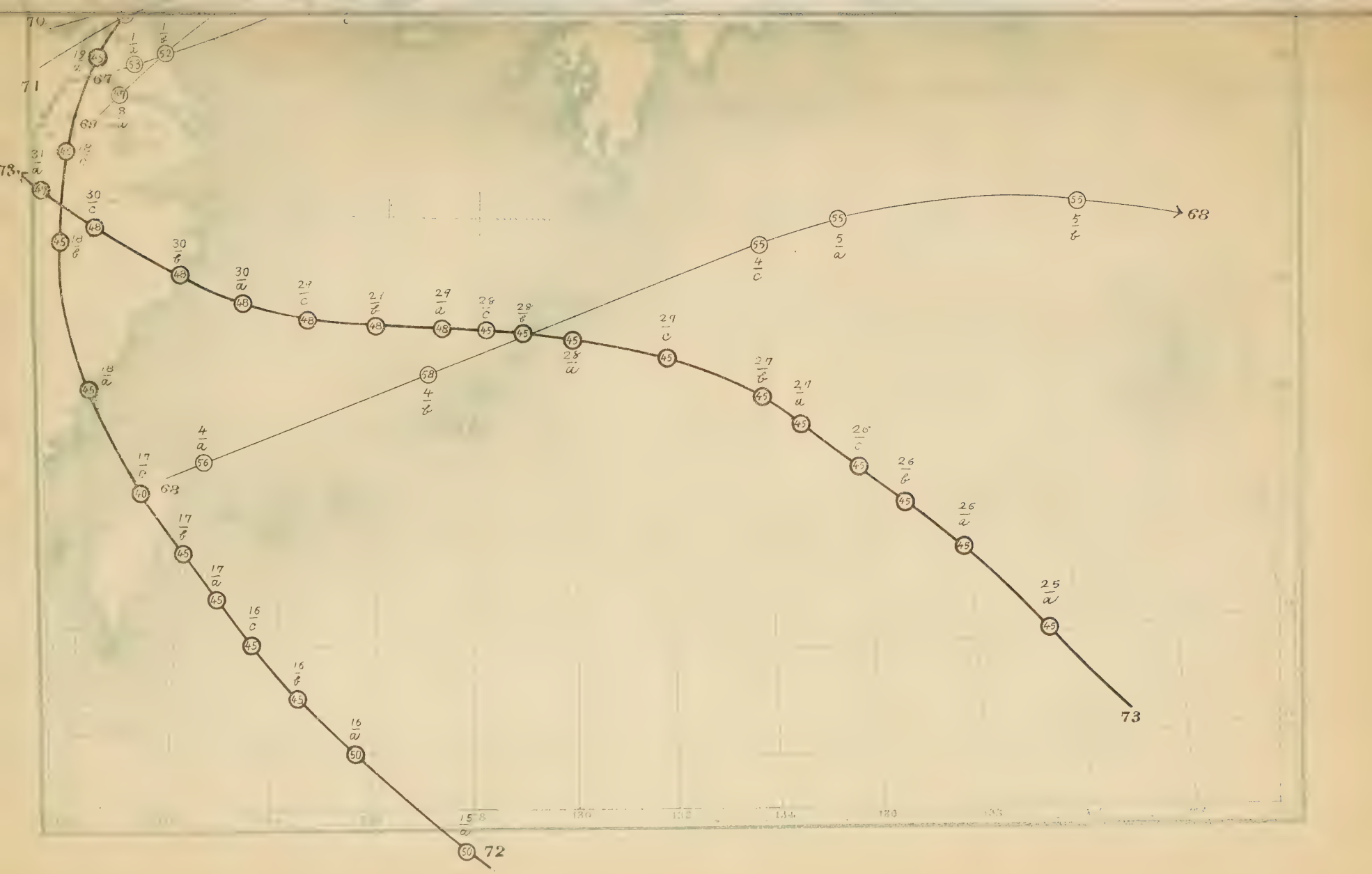
TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

June, 1910.

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

July, 1910.

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2/c
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3/c
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4/b
4/c
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15/a
16/a
16/b
16/c
17/a
17/b
17/c
18/a
18/b
25/a
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27/c
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28/c
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29/c
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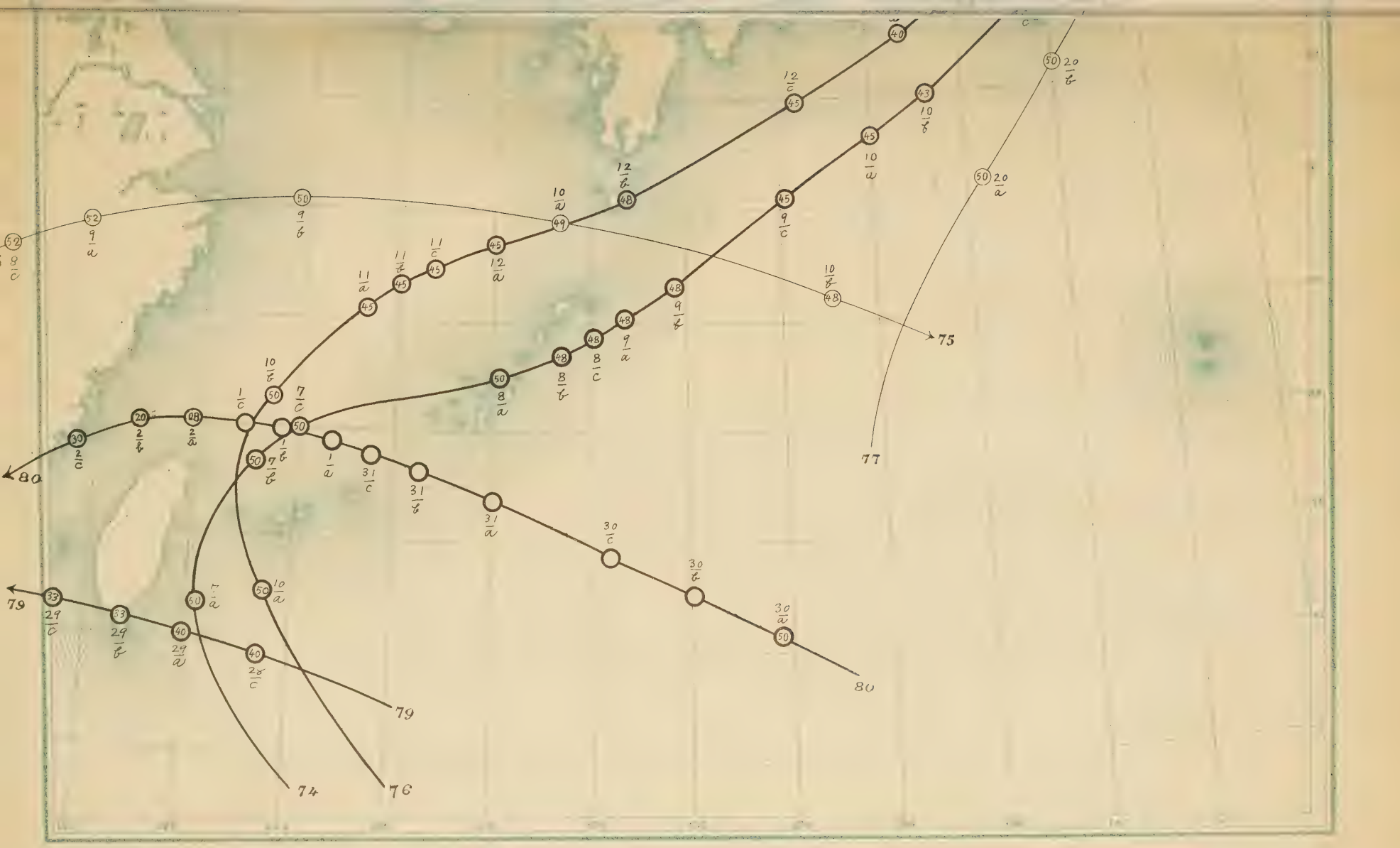
30/b
30/c
31/a

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

August, 1910.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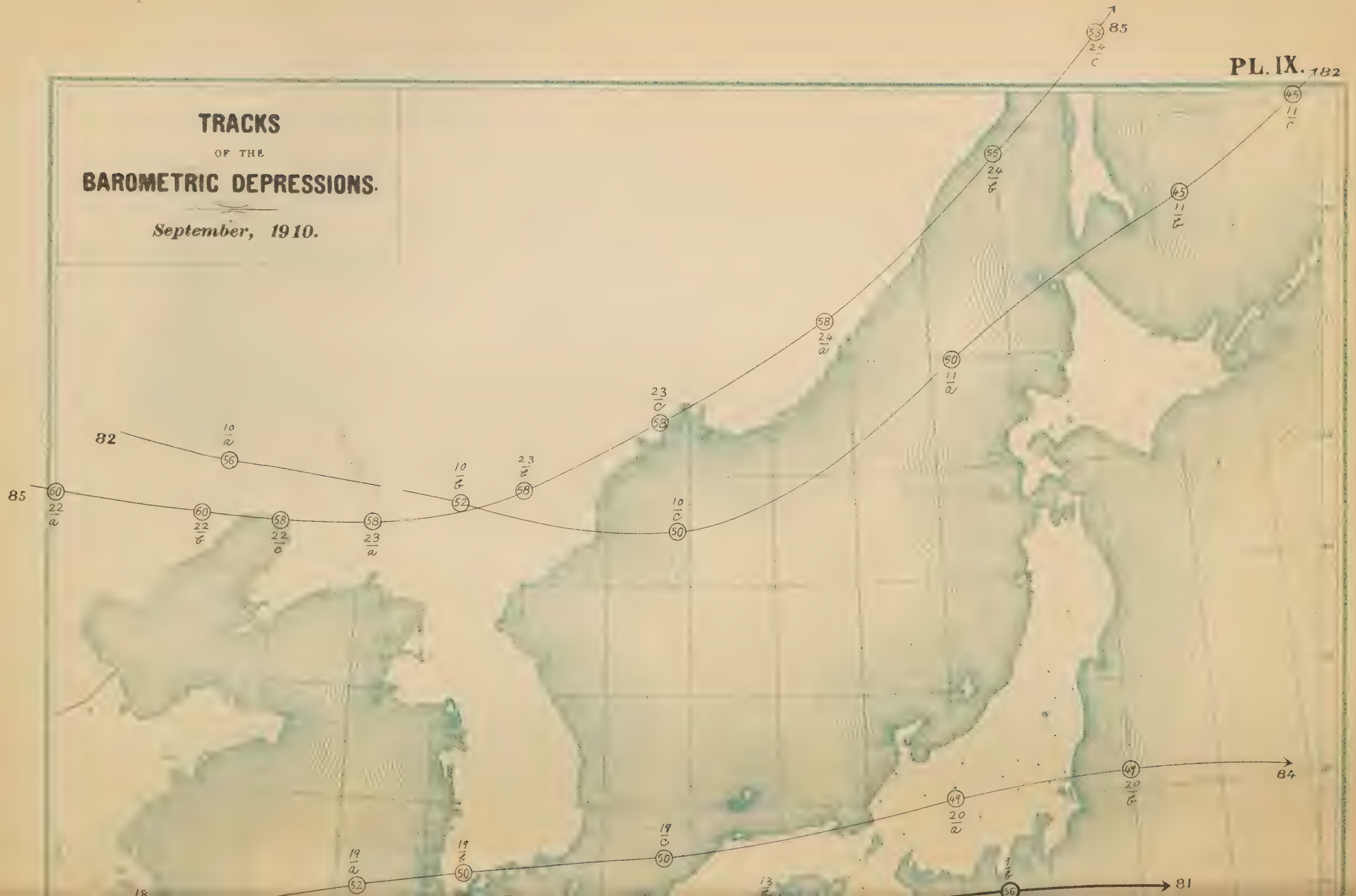
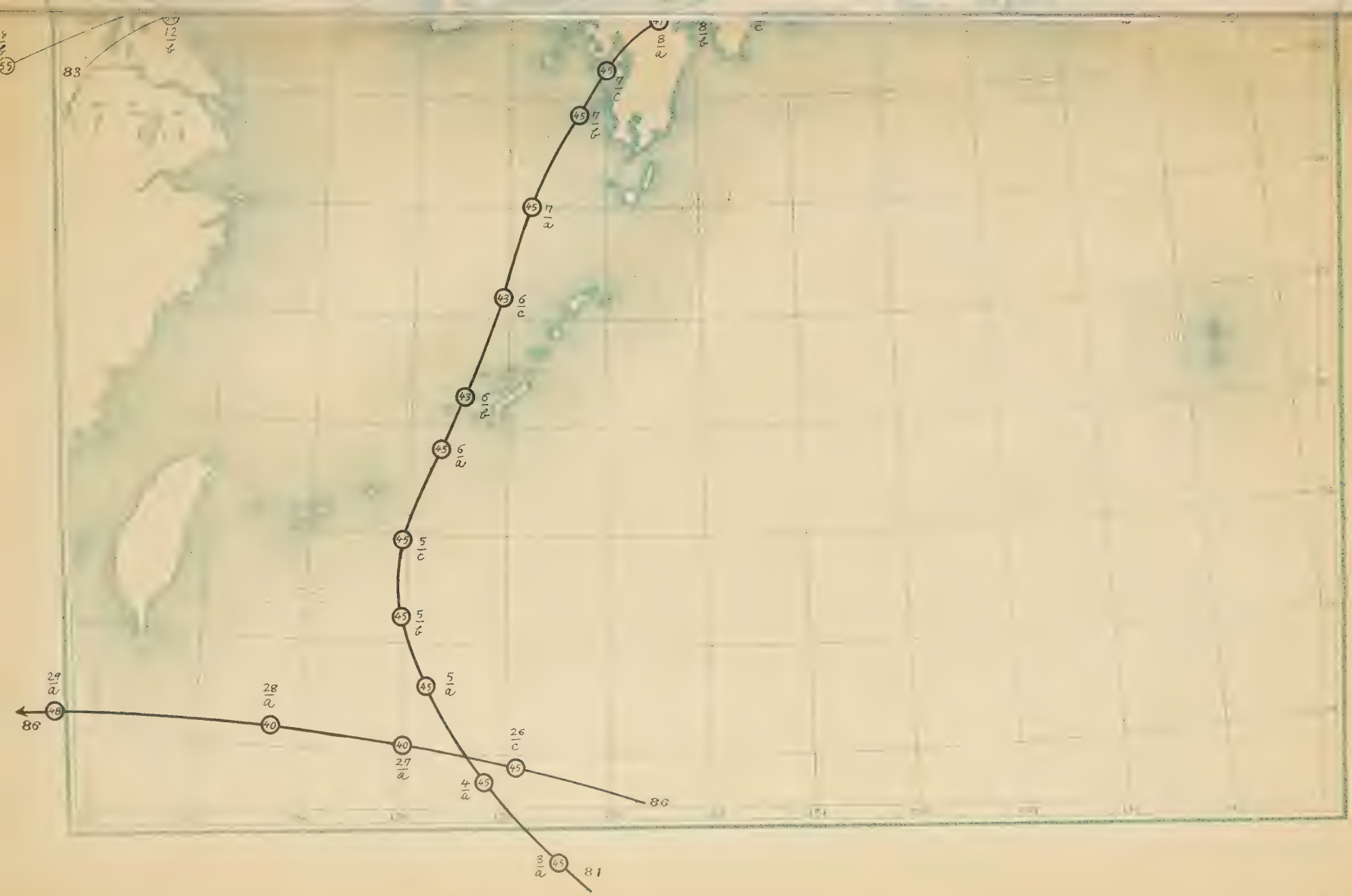
TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

September, 1910.

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45 17/b
45 17/a
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45 6/a
45 5/c
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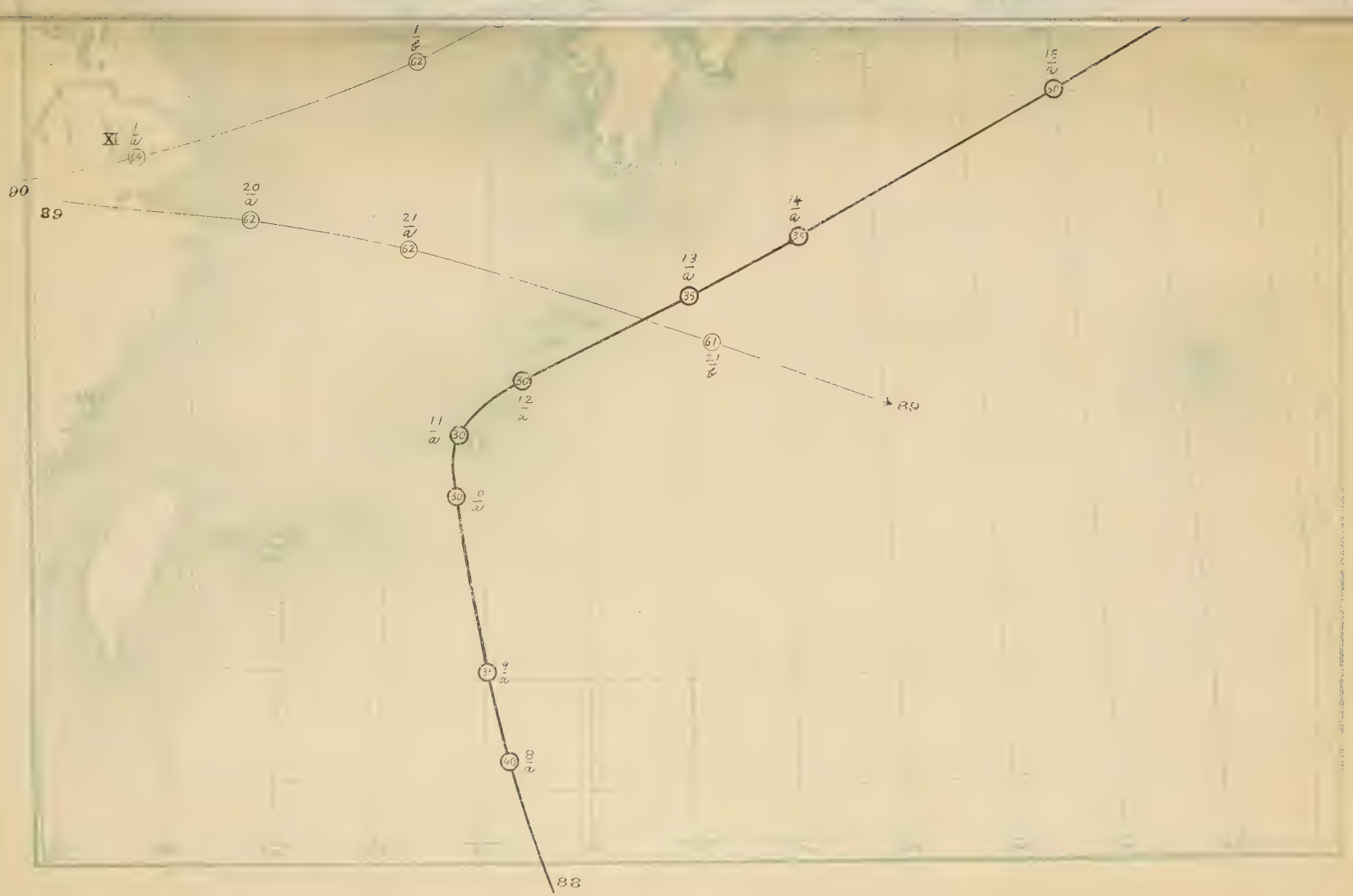
45 5/a
29/a
48
86
28/a
40
40 27/a
26/c
45
4/a 45
3/a 45
81
86

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

October, 1910.


XI
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13/a
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14/a
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21/a
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12/a
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11/a
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0/a
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9/a
31
8/a
40

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.
November, 1910.
PL. XI.
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98
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29/a
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15/d
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14/c
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8/a
28/d
28/d
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28/e
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26/c
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9/b
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9/a
29/c
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30/a
60
30/b
58
55
9/b
54
9/c
56
30/c
43
a
29/d
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9/a
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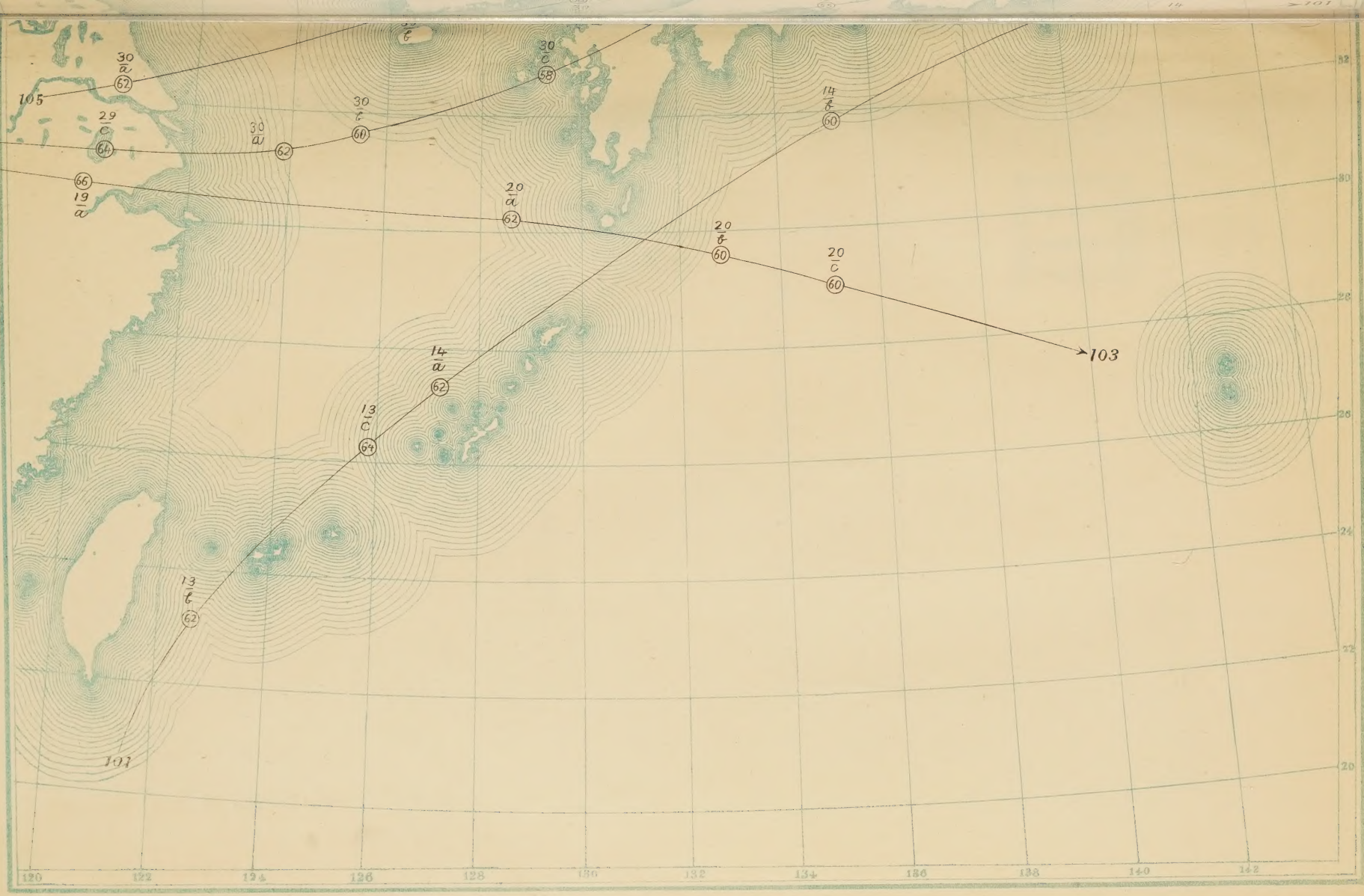
8/c
58
8/b
97

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

December. 1910.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19/a
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20/b (60)
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13/c (64)
13/b (62)
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